NOVEMBER, 1946

Orthodontics

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Office of the Editor: 8022 Forsythe Boulevard, St. Louis
Published by The C. V. Mosby Company, St. Louis

American
Journal of Orthodontics
and Oral Surgery

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VOL. 32 NOVEMBER, 1946 No. 11

Original Articles

PRESIDENT'S ADDRESS

AMERICAN ASSOCIATION OF ORTHODONTISTS

ARCHIE B. BRUSSE, DENVER, COLO.

MR. VICE-PRESIDENT, Members of the American Association of Orthodontists, and guests:

It is with considerable pride and a great deal of pleasure that I, as your president, take this opportunity to bid you a most cordial welcome to Colorado, often called the "Roof Garden of the World," and it is our endeavor to make your visit here at Colorado Springs a happy and most profitable one.

We hope the ladies will enjoy their social program, the men their golf, and all of you the evening entertainment, and, in addition, the many varieties of outdoor recreation and entertainment the Pike's Peak region has to offer you.

It is with a particular feeling of pride that I am at last privileged to stand before you at this Forty-Third Annual Meeting of our Association. This gathering is an accomplishment to which I have looked forward for the past three years, and seeing all of you assembled here now gives me a feeling of having finally met with some degree of success, after so many unsuccessful attempts to arrange and actually hold an annual meeting during the past war-torn years.

The most used word during the year of 1946 has perhaps been the word "Victory." We have enjoyed the victory of having won the most destructive war in history and in having our fighting men back home, and the victory over the numerous bans and restrictions imposed on our lives during the war.

Let us emphasize the splendid services of the Army and Navy Dental Corps during the war. In the early days of selective service, one-fifth of all rejections from the Armed Forces were due to dental defects, although the re-

quirements were not high. Later, when greater man power was needed, almost all dental standards were eliminated. As a result, all dental rehabilitations were conducted on a scale never before attempted by any army or country, and the mouths of millions of men were reconditioned.

To accomplish this mammoth undertaking it was necessary to induct more than 20,000 dental officers into the Armed Forces. These dental officers worked in three shifts of eight hours each to attain the greatest accomplishment in dental history. Their efficiency and spirit were remarkable, to say nothing of their sacrifices. In a very short period of time they became known throughout the service as one of the hardest-working corps within the Armed Forces.

During the war it was my privilege to visit the Great Lakes Training Station at Chicago and several Army Camps in this region where it was evident that, limited as they were by Army-Navy regulations, these men gave the same thoughtful, detailed treatment to a serviceman as they would give to a patient in private practice. In this convention we convey our enthusiastic appreciation to this Army-Navy Dental Corps which upheld the highest traditions of dental profession and contributed so much to the gigantic task of winning the war and restoring peace. In doing this great service the Dental Corps has shown its ability to govern itself, and earned its right to independence from administrative control of the Army Medical Corps. The Navy Dental Corps has been released from such control, and bill H. B. 6750 has been introduced in Congress to serve the same purpose for the Army Dental Corps.

The appalling condition of the mouths of inductees and the gigantic task performed in salvaging these dental cripples is a matter of open record. There is little doubt that the excellent work accomplished by the Dental Corps during the war, and the indisputable proof of the success of mass dentistry, was instrumental in bringing to the attention of our legislature in Washington, the great crying need for adequate dental care throughout the nation.

Just now all current medical and dental journals are concerned with the passing of the National Health Bill. Introduction of this bill has pointed the way to the fact that unless some form of voluntary health insurance is put into action, and successfully so, then a compulsory legislation may be the other choice. At the present time there are 130,000 individuals in Colorado who have joined the voluntary surgical insurance plan, the majority of them being in the lower income bracket. A democratic form of government is ever changing, with a continuous shifting and adjusting of balance between individual freedom and general welfare. Our legislation was amended years ago so that we might have compulsory education, and some form of compulsory health insurance is most certain to be tried out if the voluntary plans fail in their objective. Naturally, we favor the voluntary plan.

Fifteen years ago, while discussing state or panel dentistry, the late Dr. Harry Kelsey stated: "Certainly health is as important to good citizenship as education—and more important to the individual himself. When this idea is fully absorbed by the public, we are going to devise means, good or bad, whereby

every individual not only will find it possible to secure various kinds of treatment and advice to enable him to remain in good health, but he will even be compelled to secure or to submit to health examinations and treatment, if he does not do so voluntarily. This would be state dentistry; and if they take and spend billions on education, it would be expected in time to do the same on health."

We repeat for emphasis that this statement was made by Dr. Kelsey fifteen years ago. This was in the lean years of 1931-1932 when a young man graduating from dental school might have considered a fixed government job as being more certain and more lucrative than attempting to set up in private practice. Now we are enjoying the lush years and are perhaps somewhat indifferent.

But, as predicted, hard times soon may be knocking at our doors, and then would we look at the health legislation in the same light? Physicians and surgeons will continue to have their examination fees from insurance companies which they may represent, or large commercial organizations and workman-compensation patients, whereas dentists have little or no assurance of outside income, with the exception of the public school childrens' clinics and the recently inaugurated programs of the Veterans' Administration.

One major factor to be considered in passing the health bill is the method of financing it. At the present time, everybody from magnate to charwoman is paying such high taxes that it is difficult to see how further taxes can be levied. This may make modification of the health program necessary and may be cause for delay but will not, of course, prevent eventual passing of such a bill.

The health bill is supposed to include adequate sums for dental research, and yet let us consider for a moment the defeat of the bill asking Congress to appropriate 100 million dollars for cancer research. Cancer has been called the greatest disease scourge of the day, a menace which plagues the human race through war or peace, taking its toll without respect for race, creed, or color, killing nearly 200 thousand persons annually in the United States, and exacting an economic loss every year of more than 800 million dollars. This bill was defeated only recently by "roll-call vote" in the House of Representatives.

Speaking of a more specialized field, I have been told that 60 per cent of our Nation's children are in need of orthodontic care. The majority of parents in normal times cannot afford treatment, and if they could, we would not be able to furnish enough skilled specialists to cope with the situation. The demand for graduate orthodontic training is greater now than it has ever been, and the subject of graduate and postgraduate orthodontics is discussed whenever orthodontists meet, especially since so many men, all of whom are experienced dentists, have returned from military service. Short basic courses are not the solution to the problem, and any compromise would lower the standards and impede progress. I recommend that we should increase the man power in our specialty by establishing orthodontic internship with adequate compensation in our dental colleges.

One of the most enjoyable features of our organization is the relationship with men of our profession who live in the Latin American countries, and we extend a warm welcome to those who are with us here at Colorado Springs. A delegate from South America once declared emphatically that the interchange of ideas and friendliness between us meant more than the visit of an ambassador.

We meet these good neighbors on a common plane, and we appreciate their contribution to our profession. It is our sincere desire to further the understanding between our countries and continue this good neighbor policy. Drs. Atkinson, Griffin, Weldron, and many others have visited Latin America these past years, organizing societies and exchanging professional ideas.

I have received letters from most of the Latin-American countries wishing us a successful meeting here in Colorado, and it is my hope that in the near future the International Orthodontic Congress will be revived, and that we shall meet in some city south of the Border.

Since our last meeting in Chicago, in April, 1944, some notable men have passed from the ranks of orthodontics, men whose death is a personal loss to many of us, and a great loss to the profession.

Dr. Harry Kelsey, past president of the Association, died suddenly at his home in Baltimore, Maryland. He was one of the most lovable men of our profession, and was particularly kind and considerate to the younger members of our specialty.

Dr. Oppenheim, although not a member of our Association, was acquainted with our problems, and an ardent research worker. At the time of his death, he was concluding research on light and intermittent force in orthodontic treatment.

As President, I expressed the sympathy and deep regret of the American Association of Orthodontists.

At this time, I should like to present my recommendations for your consideration.

I feel that the present method of selecting the recipient of the Ketcham Award is a misinterpretation of the manner in which the late Dr. B. Frank Gray wished to honor the memory of Dr. A. H. Ketcham.

In a conversation several years ago with Dr. Gray in Dr. Wm. Humphreys' office, he stated that the award should be given to encourage young men in orthodontic achievement, and that it should be given concurrently each year for the outstanding contribution to orthodontics during the year.

It is my suggestion that we have a somewhat permanent Committee of Award comprised of the Associate Editors of the AMERICAN JOURNAL OF ORTHODONTICS. As Associate Editors, they would be acquainted with current literature, and better qualified to judge. Speaking for myself, I know that I did not feel qualified to be a member of this committee.

The growth of our organization has been steady and consistent, and the increase in membership has been increasingly large. With the new members taken in this year, we will be close to eight hundred strong. I feel that we

are now too large an organization to elect our officers in the manner outlined in our present bylaws. I feel that there is a need of an amendment to include a definite nominating committee, and as an example of such a committee, I wish to present the procedure of the American Urological Association.

This nominating committee consists of five members—the three most recent living past presidents, and two active or senior members in good standing, to serve for one year. One senior or active member is nominated by the executive committee, and one or more members are nominated from the floor during the general session.

This procedure is presented merely as an example of such a committee and could be adapted at the convenience of any other organization. In our own organization, two presidents have been held over in office because wartime restrictions prevented our holding an annual meeting—and we use this as an illustration. Had there been such a provision in our bylaws, the emergency could have been handled by means of an annual meeting of the Board of Directors, at which time reports could have been submitted, business transacted, and new officers nominated. It would be only a business meeting of the Board, and would not include scientific discussion.

The various papers not read could be collected and printed in the JOURNAL, and thus assure widespread familiarity with every phase of procedure in the Association in that year.

Under the present system, the recent emergency has caused us to lose three complete years of scientific study and research.

I feel a deep appreciation for many things connected with this convention —far too many to speak of them all—but I feel compelled to mention the courtesy and help of the Colorado Springs Chamber of Commerce, of the Broadmoor Hotel, and of the other hotels in Colorado Springs that are making a sincere effort to accommodate our unprecedented attendance.

I wish to thank the members of the Association who have come. I thank each and every one of you for the privilege and honor of allowing me, as President of the American Association of Orthodontists, to address you here today. It will always be the cherished memory of my life.

GNATHOSTATIC DIAGNOSIS

WILL G. SHEFFER, D.D.S., SAN JOSE, CALIF.

THE title of this paper, up until the week before last, was "Streamlining Your Diagnostic Technique," and this presentation was to have been a clinical demonstration displaying diagnostic instruments and technique, combined with slides and lecture repeated twice during the morning session. When our programs appeared, I found that I had been assigned the timeworn title, "Gnathostatic Diagnosis."

It was not without some trepidation that I altered my paper to fit the programmed title because I realized that a paper presented before this organization should be started, as Dr. B. E. Lischer once said, at least four months before it is read. But for nearly twenty-three years some form of gnathostatics has been used in my office procedure, and if the program committee wants gnathostatics and you have been kind enough to be present, I am happy to attempt to cover the program committee's titular assignment.

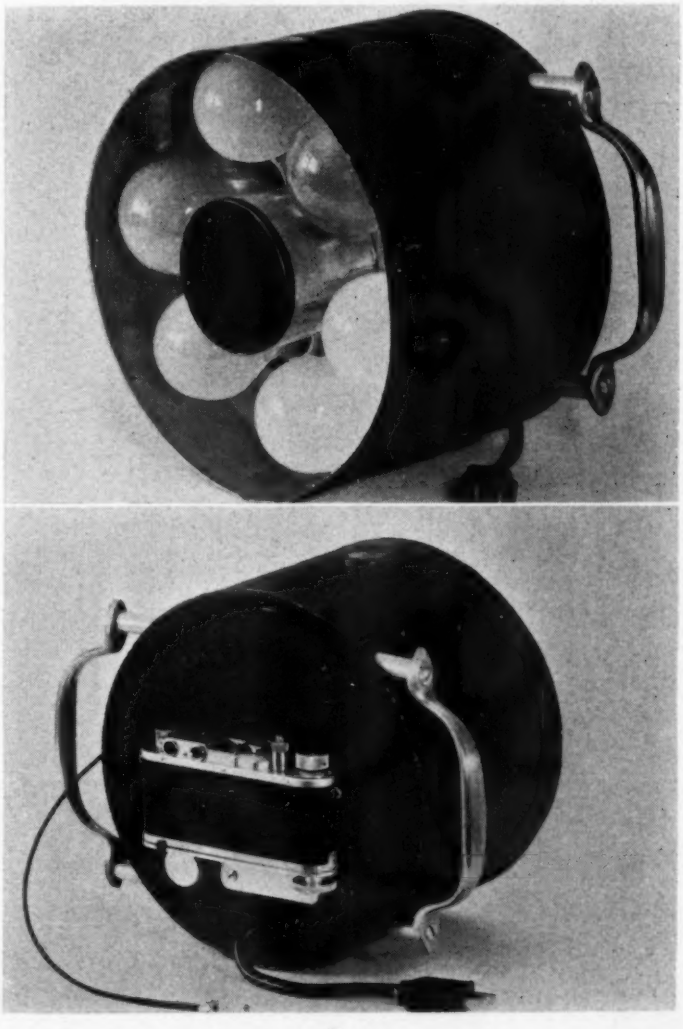
Gnathostatics has been abused more, ridiculed more, and praised more in the last quarter of a century than any other method of investigation or word we have in orthodontics unless it might be the praise or ridicule we have noted about the use of the word orthodont*ia* ever since it was first used over a hundred years ago. Many orthodontists throughout America have used various forms of gnathostatics to record dentofacial deformities. Most orthodontists observing gnathostatics for the first time immediately grasp the vision of the unlimited usefulness of the investigation, seeing in it a method that can record completely and accurately the existing dentofacial deformity. This enthusiasm has been particularly noticeable in beginning orthodontists who, attracted by the complexity of the technique yet impressed with its accuracy, have sought to use gnathostatics, and particularly the orbital plane, as an infallible guide for treatment. Their enthusiasm soon wanes, however, when they find that gnathostatics is but another method of investigation and that the value of the endeavor is dependent upon the continual compilation of data that seemingly has no direct bearing on the mechanical completion of treatment. Older orthodontists, too, have given up gnathostatics because to compile data continually becomes just one more routine effort which in these busy times can be eliminated, thereby leaving more time to start another patient's treatment.

There are many orthodontists throughout the country who do use gnathostatics and who continue to make valuable records of their patients' treatment progress. Their understanding of what has been accomplished with the

Read before the Forty-Third Annual Meeting of the American Association of Orthodontists, Colorado Springs, Colo., Sept. 30-Oct. 3, 1946.

appliances is in direct proportion to the amount of time that is spent in reviewing the accumulated data. Happy, indeed, is the man who, when called upon to present a treatment-progress report of a patient, can show in charts and records of measurement just how far a tooth has been moved. An assistant can be taught in a short time to be accurate to within one-half millimeter, which is well within the limit of personal equation variation.

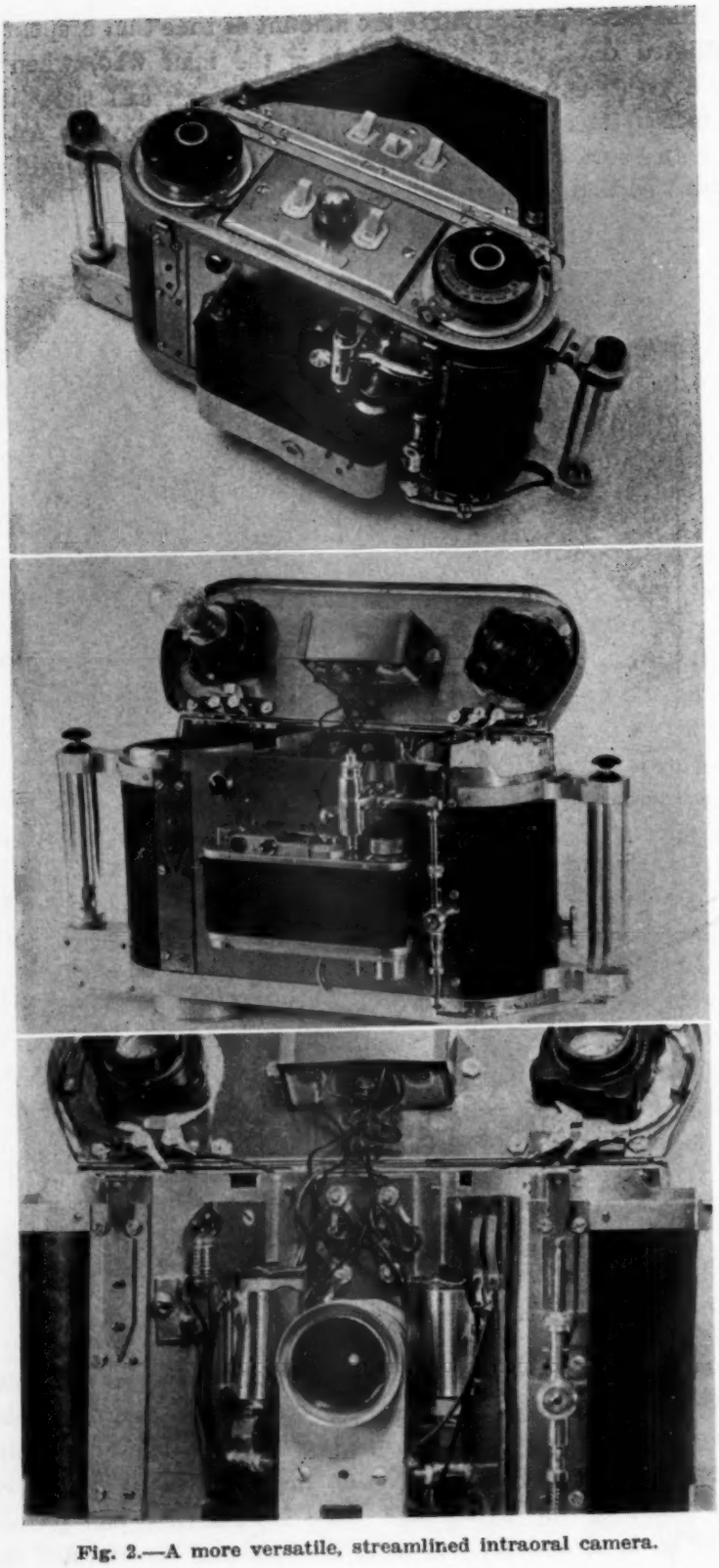
A.



B.

Fig. 1.—An inexpensive yet efficient intraoral camera.

Photography offers the orthodontist one of the simplest and most accurate ways of recording treatment progress. Intraoral photographs which need not be made to scale can be easily and quickly made in black and white or color without the removal of arch wires. One inexpensive yet handy camera used for over ten years by the writer was made from a cake pan purchased at the dime store (Fig. 1, *A* and *B*). A more modern and streamlined camera in al-



A.

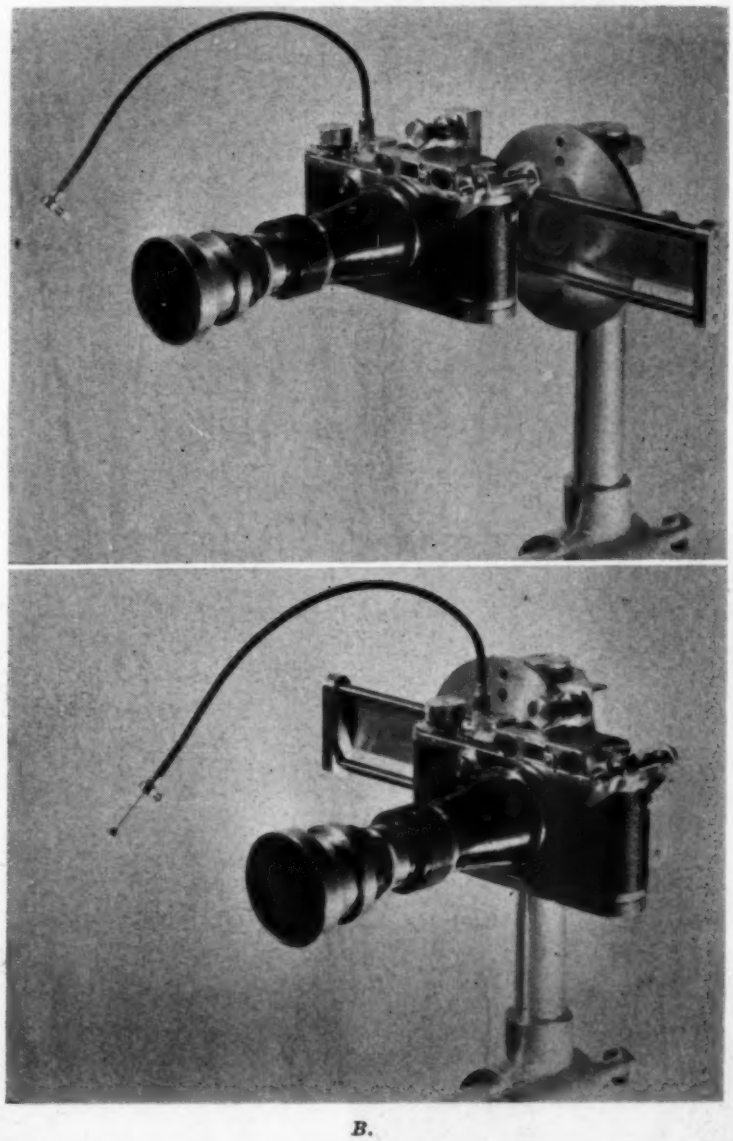
B.

C.

Fig. 2.—A more versatile, streamlined intraoral camera.

most daily use for over five years is more versatile (Fig. 2, *A*, *B*, and *C*). It operates on either 110 A.C. or on small enclosed batteries or, if necessary, on an automobile battery. It makes either color or black and white and uses either flash or photoflood lights. It requires no focusing, can be diffused left or right, and does not shine in the patient's eyes. The main objection to owning such a camera is that it is so convenient to record interesting treatment progress, one spends too much time printing up the numerous negatives.

A.



B.

Fig. 3.—*A*, Camera in position to make left profile photograph. *B*, Camera in position to make right profile photograph.

Profile and front-view photographs are valuable additions to one's diagnostic records. By placing a telephoto lens on the camera, which is used on the intraoral camera, photographs of good perspective can be made. By

Fig. 4.—Camera rotated on lens axis to make front-view photograph.

A. *B.*

Fig. 5.—*A* and *B*, Portraits without black stickers on the diagnostic landmarks.

shifting the camera position left and right, both profiles can be recorded when the patient is swung to the corresponding left and right positions (Fig. 3, *A*, and *B*). By rotating a miniature camera on a turrethead on the lens-axis, front view photographs can be made with more negative area latitude (Fig. 4). Upon completion of treatment it is a pleasure to make a portrait for the patient without the black stickers on the patient's diagnostic landmarks (Fig. 5, *A* and *B*).

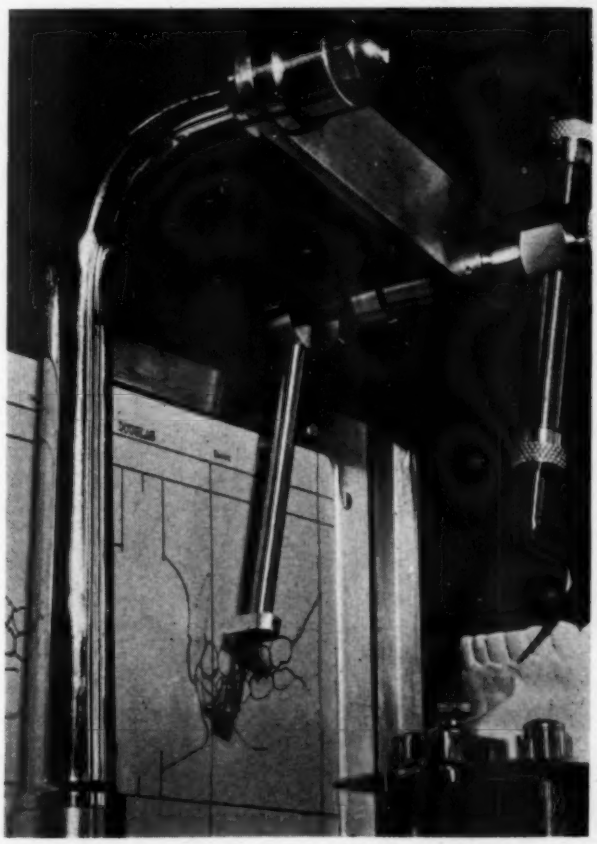
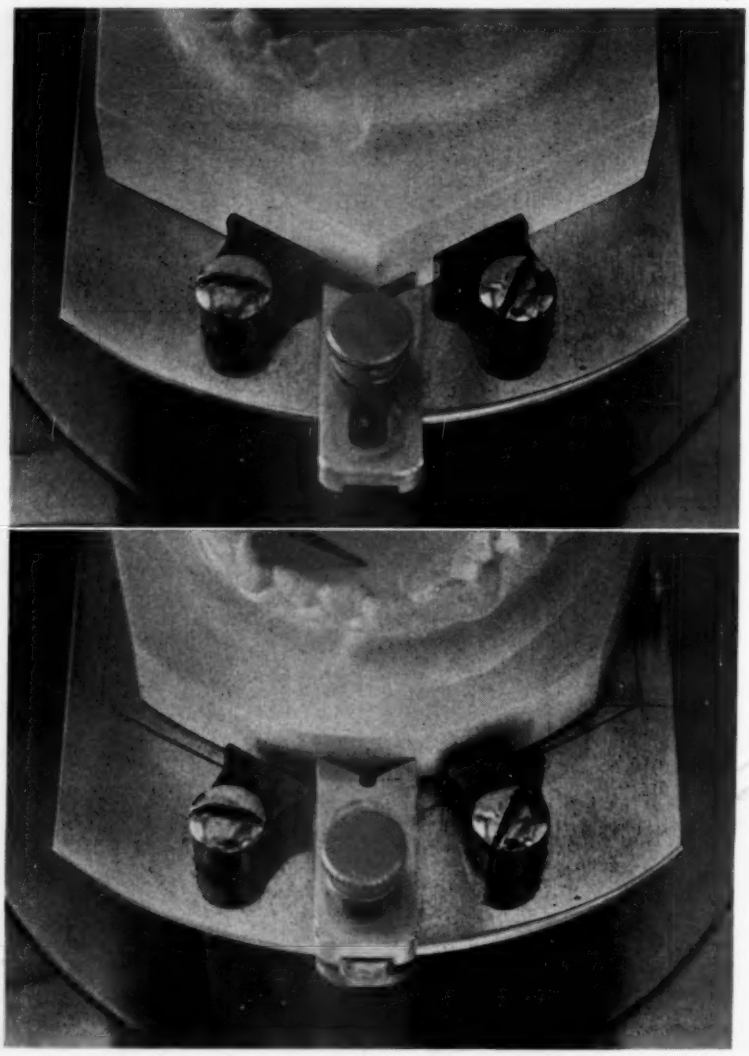


Fig. 6.—Lower cast in position in symmetropantograph.

For many years we have admired the records of orthodontists using the tracings of cephalometric x-ray pictures. In the office of every orthodontist who has made gnathostatic records are valuable recordings which, if made into tracings on charts, would add to the understanding of which teeth have been moved, and how far (Fig. 6). The tracings can be made accurately whether the models have been made with the newer-shape former, introduced about twelve years ago, or when trimmed according to one's eye, providing of course the model is orientated in the symmetropantograph on the eye-ear and orbital planes (Fig. 7, *A* and *B*). Profile tracings of the model show whether the lower anterior teeth have been tipped forward or developed forward bodily (Fig. 8). One has but to record a mouth with model profile tracings ten or fifteen years after treatment to realize that there is considerable growth change in a face after the retainers

are no longer worn. Likewise, charted follow-up photographs record growth changes but not always in the areas expected or desired most when treatment was started.

A.



B.

Fig. 7.—*A*, Lower cast made with newer-shape former. *B*, Lower cast with rounded anterior portion.

Gnathostatics has done for orthodontics what the miniature camera has done for photography. Those attempting to use the miniature-size negatives soon found that exacting technique procedures had to be followed or the results were discouraging. Fine-grain fast emulsion film and time-and-temperature development replaced the darkroom procedure of the days when 8 by 10 negatives were used. Those who did not care to follow the exacting technique demanded by successful miniature photography went back to using larger-size negatives. But their photographic technique and the technique for all size

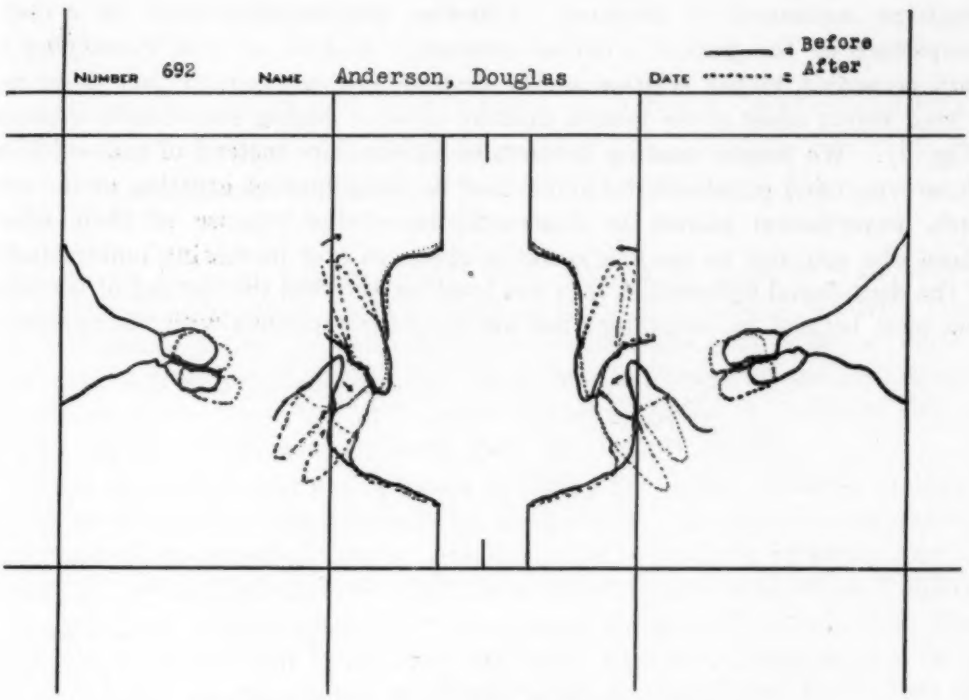


Fig. 8.—Model tracings of before and after treatment.

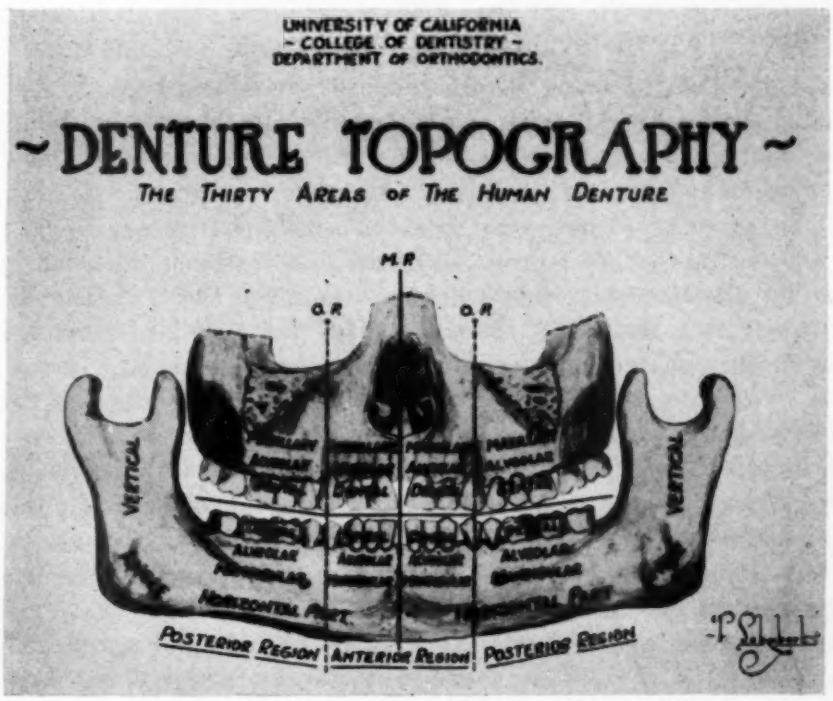


Fig. 9.—The thirty areas of the human denture.

negatives continued to improve. Likewise gnathostatics gave us a better perspective of the patient's dental anomaly. Instead of just classifying the teeth according to the relation of the first molars, we learned that there were at least thirty areas of the human denture affected during orthodontic treatment (Fig. 9). We began treating dentofacial deformities instead of malocclusions. Those who tried gnathostatics and found its technique too exacting or too much work, nevertheless gained in diagnostic knowledge because of their efforts. Those who continue to use gnathostatics enjoy an ever increasing understanding of the dentofacial deformities they are treating and find the method of investigation most helpful in recording what has been accomplished with the appliances.

MANAGEMENT OF CLASS II, DIVISION 2 (ANGLE) MALOCCLUSIONS

FREDERICK T. BARICH, D.D.S., M.S.D.,* EVANSTON, ILL.

CLASS II, Division 2 is one of the most interesting types of malocclusion. In the Class II series the percentage of Division 2 cases is relatively small, but there comes a time in every man's experience when he is called upon to treat irregularities of this kind. One must bear in mind that malocclusions in this category, like irregularities in other categories, must be carefully and accurately analyzed before a treatment plan can be formulated.

First of all, it might not be amiss to review the salient features of irregularities of this type. The majority of listeners in this audience are familiar with Angle's classification, so that one only will be used as reference for this discussion. Other and more comprehensive methods have been devised and are in general usage at this moment by the profound students of orthodontics. Their places are becoming well established and have, without a doubt, added to the armamentarium of orthodontic diagnostic aids. If these were tossed into this discussion, the result might be confusing, and certainly that is not the intention here. The terminology, however, will be taken from Lischer when mandibular position is described and when tooth positions are mentioned. All of you should be familiar with these terms.

In describing Class II, Division 2, Angle[1] states: "Division 2 is characterized specifically by distal occlusion of the teeth in both lateral halves of the lower dental arch, indicated by the mesio-distal relations of the first permanent molars, but with retrusion instead of protrusion of the upper incisors. In this division there are no complications from pathologic conditions of the nasal passages, hence the mouth is kept closed the normal amount of the time, and the lips perform their functions normally which causes the retrusion of the upper incisors during their eruption until they come in contact with the already retruded lower incisors, resulting in the crowding of the upper teeth in the canine region. The width of the arches is more nearly normal and there is less abnormal overbite elevation of the lower incisors probably on account of their better opportunity for performing their function. There is usually an abnormal overbite of the upper incisors naturally resulting from their being tipped downward and inward from their normal outward incline with the teeth of the lower arch usually quite even and regular as to arrangement. Naturally the marring effect on the facial lines, due to malocclusion, is noticeable and characteristic, the retreating jaw and compressed upper lip alone making diagnosis easy."

In addition to the above description it might be well to mention the other salient features which have been noted from clinical observation and study. In

Read before the Midwinter Meeting, Chicago Dental Society, Feb. 13, 1946.

*Associate Professor, Northwestern Dental School.

the first instance, the upper anterior teeth, which usually include the cuspids, may have only one, or all six, or any combination thereof, in linguo- and supraversion. The most prevalent case, however, presents with the central incisors only in those positions of perversion. The posterior segments of the upper arch are usually in linguoversion, and this is uniformly the situation in all Class II cases. This is so because these segments occlude with a narrower portion of a lower arch which, in most cases, approximates normality in form. In those instances where the lower arch is narrow in its lateral halves, total or partial cross-bite might exist in the first or second premolar areas, or possibly in both regions.

The curve of Spee is usually exaggerated, as it is in any case of deep anterior overbite, although the anterior teeth are not included in the definition of this curve.

When considering the over-all profile of the patient, it appears that the bite, so-called, is closed; or, to state it more accurately, the lower third of the face appears to be shortened in the vertical dimension. There also seems to be an abundance of lip material, both upper and lower; and the action of all the muscles appears to be strong and positive. The above observation would lead one to believe that the posterior segments of teeth are in infraversion. This, however, has not been proved conclusively. One of these days some worker in this field might come up with the answer.

Practically all of the patients who fall in this category have the square-type teeth, arches and facial contours attendant with all other anatomical conformations of the square type. The hard palate is broad and relatively flat, almost without exception.

From the above sketchy analysis, clues can be gleaned regarding the formulation of the treatment objectives. The plan of attack varies with the operator, as does the choice of appliances to effect the various tooth movements. In brief, the treatment objectives are:

1. Reduction of linguo- and supraversion of the upper anterior teeth.
2. Distal movement of the upper buccal segments.
3. Establishment of arch form in both arches.
4. Reduction of supraversion of lower anterior teeth.
5. Establishment of a flat curve of Spee.
6. Placement of the mandibular denture under the maxillary denture.
7. Finishing.
8. Retention, after establishment of normal occlusion, so-called, by the various mechanisms.

While attacking any orthodontic problem it is well to keep in mind that the teeth are attached to the bone through the medium of the periodontal membrane. This membrane and the tissues adjacent, i.e., the cementum of the root and the lamina dura of the alveolus, are the first to be affected by the pressures placed in the appliance by the operator. The crown of the tooth serves as a mode attachment for the mechanism and assists or hinders tooth movement through the inclined planes and incisal edges during all of its occlusional func-

tions. Rapid movement or movement effected by forces which are too strong will result in destruction of the alveolar crests, and once these bone crests are destroyed they will never regenerate. Oppenheim,[2] through his work on this problem, proved the above quite conclusively when he stated: "The buccal and labial plates of bone against which the teeth are moved in a great percentage of our patients consist only of a very thin layer amounting to half a millimeter, which toward the alveolar crest becomes often razor-edged. The obstacle to our movement, the bone, has to give way. This thin bone will often disappear entirely when teeth are moved for distances that exceed, in most cases, many times the thickness of the bone. But nature has provisions for counterbalancing this thinning and disappearing. This compensation measure involves the formation of the so-called osteophytes on the outer surface of the bone, while it is being resorbed from the inside. The formation of osteophytes is well developed in dogs and monkeys, but very poorly in man. These osteophytes need much time for their development, and we have to furnish them an opportunity by proceeding slowly. Otherwise the bone disappears to a great extent by undermining resorption. This is extremely detrimental if it happens at the alveolar crest. A probably permanent damage may thus be inflicted as has been pointed out in the beginning. To recollect, we have to deal with two factors: the very thin tissue of the periodontal membrane and the quite limited thicknes of bony plate. This fact calls for careful and slow procedure."

Oppenheim reiterated or confirmed the findings of Stuteville[3] when he said: "The injuries which are sustained by the alveolar bone during orthodontic treatment are: (a) The reduction of height of the alveolar crest. (b) The thinning out or complete elimination of the alveolar wall."

It is also well to remember that bone is essentially a plastic tissue and will change under pressures, strong or light. Any tooth will maintain its position in the dental arch when all of the forces, natural or unnatural, acting upon it are in equilibrium. Any disturbance of this equilibrium will result in tooth movement. It behooves us all to understand the biologic principles first and foremost; and then to bend every effort to learn the physical principles involved in the various mechanisms used for the correction of malocclusions.

Basic biologic and physical principles do not change with the kind of appliance used for the purpose; the only thing that changes through the mechanism medium is the application of those principles. In other words, and to put it tersely, "There are more ways than one to skin a cat."

PLAN OF TREATMENT

The appliances used for this discussion are the plain round labial arches with McCoy open tube attachments and lingual extensions on the upper arch, and fixed removable lingual appliance and round labial arch with McCoy open tube attachments on the lower arch. Rubber bands, of course, will be used for those phases of treatment where intermaxillary anchorage is indicated.

Phase 1.—In the initial phase of treatment, i.e., reduction of linguo- and supraversion of the anterior teeth, the upper arch wire is lengthened by opening the spring loops, and it is also adjusted gingivally by bending anterior to

the spring loops. The resultant objective action of these two forces will move these teeth labially and depress them at the same time. The reactionary forces absorbed by the first permanent molars have now become objective in the overall sense of treatment. These units will tend to move distobucally by tipping and bodily action. These adjustments of the labial arch are maintained until the central incisors are carried to their desired positions in the dental arch.

Phase 2.—Distal movement of the upper buccal segments has commenced in Phase 1. In order to augment this movement, intermaxillary force is brought to play at this juncture in treatment; or in certain cases it may run concurrently with Phase 1. In certain other cases the initial intermaxillary Phase 2 may not be necessary. In cases of this type the mandible will come forward of its own accord when the anterior and posterior occlusions are unlocked in Phase 1, just described, and Phase 4 where bilateral expansion of both arches runs concurrently or separately.

When intermaxillary rubber bands are placed for the first time, it is essential that the downward pull on the upper labial arch is equalized by adjusting this arch farther gingivally if necessary, otherwise the incisors will elongate. This adjustment plus the distal force exerted by the rubber bands intensifies the action on the upper molars because the entire lower arch is added as an anchorage facility. The upper molars will move distally at a greater rate and not infrequently will take the second premolars with them. Occasionally the influence is felt by the first premolars so they too will tend to move distally.

Phase 3.—The establishment of arch form was started in the upper arch in the first two phases. Bilateral expansion of the upper arch is effected further by widening the arch wire. As the molars move bucally, the premolars and cuspids move with them through the medium of the lingual extensions. Accurate control of these units can be maintained by individual adjustments of the lingual extensions which simulate those of any auxiliary spring. Bilateral expansion of the parallel units of the lower arch may be accomplished by the addition of finger springs on the lateral aspects of the lingual arch wire. If first molar expansion is necessary in the lower arch, it may be done by torquing the crown buccally and placing the correct amount of expansion in the arch wires. This maneuver will tip the molars bucally. When they have reached the desired positions, the roots may be moved buccally by reversing the torquing procedure. The occlusal relationships must be maintained during this phase of treatment; otherwise the premolars and cuspids will flare out buccally and the natural forces of occlusion will be lost. This will impede the progress of the case.

Phase 4.—Supraversion of the lower anterior segment is reduced by two means. In the first instance the intermaxillary forces used to move the upper molars distally and to position the mandibular arch under the maxillary arch have a direct reaction which in itself tends to depress the anterior teeth. These teeth act as a fulcrum when the molars are elevated and tipped mesially by the direct action of the rubber bands. In the second instance the lower labial arch is adjusted gingivally in order to depress the anterior segment by direct or objective action. The reactionary force on the molars tips them distally, thus

neutralizing the mesial tipping action of the rubber bands. In certain cases this latter adjustment is not necessary because the first instance takes care of the situation automatically.

Phase 5.—In cases up to 12 years of age the mechanics explained in the preliminary phases usually take care of the curve of Spee. When the 12-year molars are present, it is sometimes necessary to run an extension from the lingual arch through the lingual groove and across the occlusal surface in order to tip back and depress these lower units. This extension may be adjusted like an auxiliary spring; or the desired action may come automatically where the lower anchor molars tip distally when the lower anterior segment is depressed as explained in Phase 4.

Phase 6.—The placement of the mandibular arch under the maxillary arch might come about in any one of three ways or any combination of them. When the anterior and posterior occlusions are unlocked in the phases explained previously, the mandible might come forward of its own volition. Second, when the above is accomplished and intermaxillary force is utilized to carry the upper molars distally, the mandible with this urging might come forward to its correct position. Third, if the mandible fails to respond to either or both of the first two, it is necessary to pit the maxillary arch against the mandibular arch and institute a steady and prolonged period of intermaxillary activity. This type of case is the most stubborn, and the anchorages in both arches must be carefully guarded. Only time will give the desired relationship. Some of the change probably takes place in the temporomandibular articulation while other beneficial changes take place elsewhere. The upper posterior segments move distally to account for part of the anteroposterior discrepancy, and the lower denture is displaced anteriorly on its bony base. The rubber bands should be worn until the relationship has gone beyond the neutral position posteriorly, and the anterior relationship has slightly exceeded the end-to-end incisal occlusion. At this point the patient is advised to wear the elastics at night only in order to hold the new relationship.

Phase 7.—The finishing phase entails the distal positioning of the upper cuspids by direct pressure of the labial arch wire or by finger springs attached to the arch wire. The upper lateral incisors are now free to occupy their positions in the arch, and many times they will do so with little or no interference. In the terminal stages of treatment all necessary rotations are reduced.

Phase 8.—Active treatment is now completed, and as the units settle into position the occlusion is checked from time to time with articulating paper and all occlusal interferences are removed by spot grinding. During the initial part of the retention period it is best to use the treatment appliance as the retainer. After it is evident that all phases of treatment are successful, the regular appliances are removed and replaced with retaining mechanisms. The upper retainer is usually of the Hawley type, with or without the labial bow, depending on the dictates of the immediate problem. An incline plane is always added to the palatal plate portion and is made to meet a horizontal plane of incisor width in its anterior aspect. These planes will guide the mandible to its correct position and hold the vertical dimension, respectively. If any ro-

tations are necessary these units should receive band and spur retainers individually before the Hawley retainer is constructed because this type of retainer is not adequate for the purpose.

Either the lower arch should receive a fixed lingual appliance or the fixed removable lingual appliance which was utilized in treatment may be modified to serve as a retainer. Rotations must be held with band and spur retainers as they are in the upper arch.

For the average case the retention period should be approximately the same as the active treatment period. By and large, this is a safe rule to follow in any case.

A word of caution may be injected at this point. For some time now the extraction pendulum has swung far to the left and in swinging it has carried many premolars with it. Extraction of upper premolars in the average Class II, Division 2 case is a foolhardy procedure because it is nonessential to generally recognized orthodontic practices. Severe posttreatment headaches are in store for those snap-judgment operators who extract any tooth unless it is absolutely necessary. Far too many teeth have been extracted to expedite treatment by inexperienced operators. Many times they discover after it is too late that the wrong tooth has been sacrificed or that the desired result was not accomplished. Extraction of teeth may be advised only after the case has been carefully and thoroughly analyzed by a competent orthodontist, or by a general practitioner who is thoroughly conversant with orthodontic problems.

The case shown is that of a 14-year-old girl in good health with no pertinent medical history. She was an only child. The mother and father had near normal occlusions, according to the mother, so there was no accounting for this malocclusion in the family.

Active treatment ran from March, 1944, until June, 1945, or a period of fifteen months. From June until December the appliances were worn in this initial phase of retention. During this five-month interval she was seen five times for checkups. The treatment appliances were removed and the removable retainer inserted at this juncture.

Fig. 1 shows the models taken before and after treatment for purposes of comparison.

Fig. 2 portrays the left and right views of the lower arches to show the changes in the curve of Spee. The abrupt curve has been reduced to practically a straight line or a flat curve.

Fig. 3 is a tracing from a lateral cephalometric headplate which shows the finished result with the appliances in position. It also shows that the face, although not unpleasing to the eye, does not quite measure up to the standard of so-called normals. The discrepancies may be listed as follows:

	Normal	G. K. No. 1355
*N-ANS:	43 per cent	48.1 per cent
ANS-GN:	57 per cent	51.9 per cent
ANS-O:	45 per cent	46.4 per cent
O-GN:	55 per cent	53.6 per cent

*N = Nasion. ANS = Anterior nasal spine. GN = Gnathion. O = Occlusal plane.

Fig. 1.

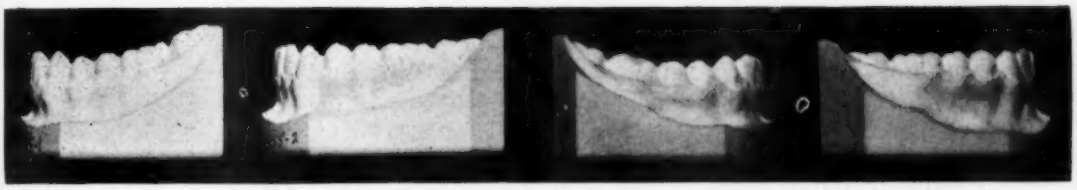


Fig. 2.

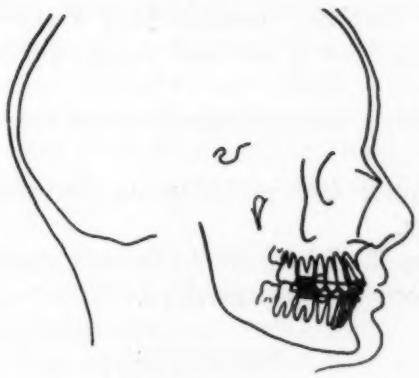


Fig. 3.

Some men in this field have not accepted the preceding figures in toto. They are used in certain institutions in order to ascertain or verify their authenticity. The first two percentages were taken from the work of Herzberg and Holic[4] when they reported their findings of dry skull measurements. A total of 326 skulls were measured in this study. The last two percentages showing lower face height have been observed by three orthodontic graduate students at Northwestern University although their problems were not the same. These men,

Rushing, Sims, and New, reported the findings in their theses which have not as yet been published. At Northwestern, however, these figures are being used as an adjunct to generally accepted cephalometric diagnostic techniques.

Fig. 4.

Fig. 4 is just another smiling child and the prognosis is good for all concerned.

CONCLUSIONS

1. Accurate diagnosis or case analysis is the primary factor in formulating a treatment plan.

2. It is mandatory that the operator have a thorough knowledge of the biophysical principles involved if the best results for all concerned are to be accomplished.

3. An appliance which will adequately treat the case should be used in any instance.

4. Extraction of upper first premolars is contraindicated in the typical Class II, Division 2 case.

5. Retaining devices should be ample to hold the teeth and jaws in their newly established positions and relationships.

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636 CHURCH STREET

A METHOD FOR RECORDING THE KEY RIDGE

SAUL M. BIEN, D.D.S., NEW YORK, N. Y.

WE ARE all familiar with the cartoonist's facile ability to indicate varied expressions of personality merely by changing a significant facial feature such as the mouth or jaw. In the very same face he can produce the optimist with his mouth turned up and the pessimist with his mouth turned down. In the same way he can show weakness or strength of character by the shape of the jaw. The receding jaw is generally accepted as weak; the protruding jaw as strong. The movement of teeth affects facial expressions similarly, which gives to orthodontists a tremendous responsibility and power.

Actually, orthodontists have in their hands the ability to change the physiognomy of the human race. More than that, however, not only do they hold the patient's appearance in their hands, but they also hold his health. Simon bases his method of gnathostatic diagnosis on the orbital, the Frankfort horizontal, and the median planes, which are completely interwoven with face form and racial type, thereby basing a physiologic necessity on an esthetic consideration.

It is the orthodontist's responsibility to secure for the patient not only the improved appearance given him, but the best ultimate positioning of the teeth and jaws in relation to one another so that the patient has continued use and comfort from them, and is more secure from periodontal breakdown than he was before treatment. It is the orthodontist's responsibility, while traumatizing tissue for varying periods of time, to maintain those tissues in the best possible tone. Proper diagnosis is the most excellent basis for achieving these objectives.

Teeth, after treatment, must be embedded in a good solid foundation of bone. Since there is now no good clinical method of growing masses of bone around teeth in adequate amounts, and with suitable dispatch, wherever and whenever it is needed, it is obviously necessary to use judiciously what the patient furnishes. According to Atkinson,[1] "From birth to adulthood the structural elements of the masticatory apparatus are in a constant though orderly change in relationship [Figs. 1 to 6]. Various parts grow at different rates of speed and amount. Areas which might seem to serve as reliable landmarks at one age may be entirely misleading at another age. Hence, as a successful orthodontist depends upon the ultimate result of growth, it is essential that he has an intimate knowledge of those structures which may enable him to have a clear conception of just what one might expect the normal to be at any age of development. This is of prime importance, for unlike the dentist,

he is not permitted, if he makes a mistake in treatment, to retreat with all the advantages he might have originally had. . . ."

The upper first molar has the broadest spread of roots and the widest base.[1] In order to support this broad base, Nature has furnished skulls with a correspondingly broad buttress of bone on which the upper first molar rests.[2]

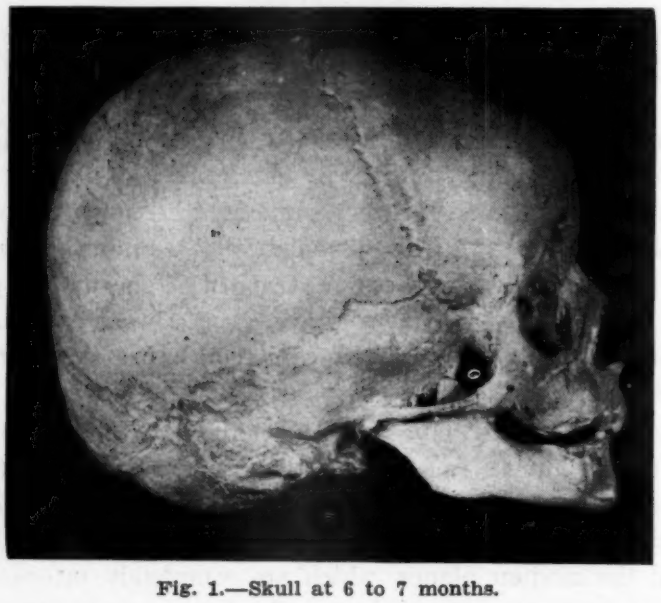

Fig. 1.—Skull at 6 to 7 months.

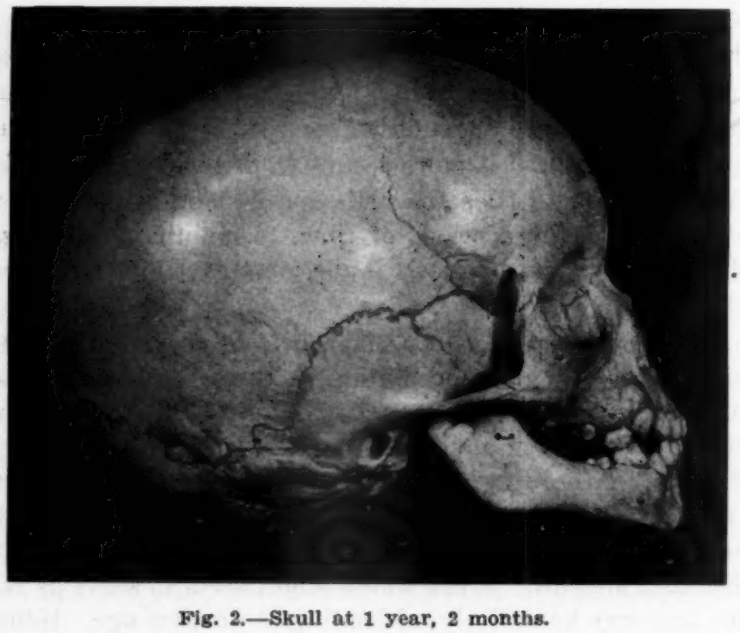

Fig. 2.—Skull at 1 year, 2 months.

This buttress of bone is known to anatomists as the zygomatic (or malar) process of the upper maxilla. Atkinson more aptly and conveniently entitles it the "key ridge."[2] He describes this portion of the upper maxilla as follows:

"These two portions are divided by what anatomists call a strong ridge, but what we will call the 'key ridge.' Immediately anterior to the key ridge is the canine fossa." According to Atkinson,[3] "One important and dependable aid to the diagnosis of the mesiodistal relationship is the key ridge, which I first mentioned in 1923. This strong ridge of bone projects downward from the

Fig. 3.—Skull at 2 years, 4 months.

Fig. 4.—Skull at 6 to 7 years.

anterior end of the zygomatic arch and normally extends over the mesiobuccal root of the upper first permanent molar. At three years of age, the mesiobuccal root of the second deciduous molar is under the key ridge and the upper permanent first molar is developing in the jugal buttress posterior to it. As the denture develops, the first permanent molar moves forward, and at the

age of eighteen, it takes its place under the key ridge. The key ridge remains constant to the bones of the cranium throughout life, regardless of race or type, and regardless of what happens to the teeth or alveolar process. Moreover, it is found true to form in all mammals.

Fig. 5.—Skull of adult with first molar in correct position.

Fig. 6.—Skull of adult with first molar in anterior position to the key ridge.

"Determination of the position of the upper denture in relation to the key ridge has a most important bearing on the strategy of treatment."

Atkinson[2] further says: "The first permanent molar is directly under the key ridge, the position I may safely say it always occupies under normal conditions when the denture is fully developed."

The value of the key ridge in orthodontic diagnosis has been established beyond a doubt. Weingart's[4] discussion of the methods of diagnosis shows that "no one method of diagnosis can be considered infallible or invulnerable and that since human judgment must be called upon to interpret our cases, we must take advantage of every known aid and employ every means that will assist us in these interpretations. After many years of experimentation and experience, I am convinced that a technique employing gnathostatic, photostatic and roentgenostatic data as herein described represents the best available practical means toward diagnostic accuracy in orthodontics. To complete the diagnostic study, it is essential to predetermine the exact positioning of the individual teeth in the skull. It remained for Atkinson to give us this missing link in the diagnostic chain, the 'key ridge.' "

The importance of the key ridge is accepted. Several means of determining it are available, but there has been no simple method for recording the key ridge on gnathostatic models. Atkinson[3] describes a simple technique for showing the key ridge on study models by means of a colloidal or modeling compound impression.

Atkinson's method of recording the key ridge does not lend itself easily to gnathostatic technique. In many cases the impression would encroach on or be entirely eliminated by the gnathostatic model base. Then, too, soft distortions of impressions are all too common and in cases of mouth deformities all but unavoidable.

A very interesting method of recording the key ridge radiographically has been demonstrated by Weingart,[4] but this also has several disadvantages from the point of view of using it in conjunction with a set of gnathostatic models of the mouth. The method requires a correlated transfer and positioning device for routine use in maintaining a constant angulation and relationship throughout treatment. This has not yet been presented. There is also a certain amount of unavoidable distortion in the radiographs prohibiting their use in a straight transfer technique.

However, a significant feature of the key ridge is that it can be oriented very easily by palpation with the index finger in the muccobuccal fold in the region of the upper first molar. The method now to be presented utilizes this simple fact, and a very direct and accurate transfer of the key ridge is obtained in such a way that its relationship with both upper and lower teeth can be noted, and the degree of protraction and retraction in relation to the key ridge accurately measured. The type of movement desired can be recorded and the progress of the case studied on succeeding records throughout treatment. It is also valuable in that an exact comparison of the relationship of the teeth can be made with both the key ridge and the orbital plane on the same models, thereby using both bony landmarks as a check against one another. Should they correspond, there can be no doubt as to the treatment prescribed. Should they not correspond, the degree of compromise necessary can be more accurately assessed. There certainly would be provided for the first time an accurate gauge for the comparison of tooth size with mouth size and shape, since there will be provided on the same model two lines repre-

senting bony landmarks which should include between them the distal half of the upper cuspid, the two upper premolars, and the mesioproximal surface of the upper first molar. Proper diagnosis obviates the necessity for the "insert-the-appliance-and-hope-for-the-best" technique.

METHOD

A stick of brown compound approximately 1 inch in length is heated gently on one side of its longer dimension. The compound is inserted in the mouth so that the buccal cusps of the maxillary second premolar and the first molar are imprinted on it, being careful to use no more than half the thickness of the stick for the impression. The stick compound is then removed from the mouth after chilling.

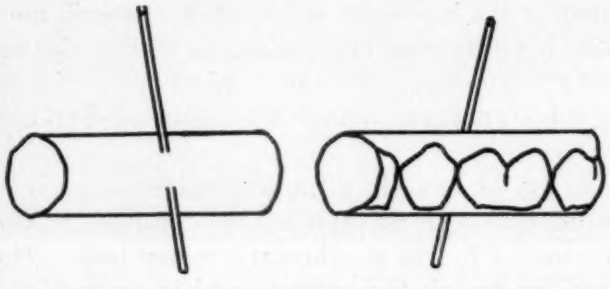

Fig. 7.—Compound index of key ridge, front and rear view.

The key ridge is palpated with the index finger. A 1 inch length of 0.036 stainless wire is cut and the ends filed smooth. Holding one end of the wire in the hand, heat the other and sufficiently so that the compound adheres strongly to it. Attach the heated end of the wire to the side of the stick compound at a point opposite the height of contour of the mesiobuccal cusp of the upper first molar and insert immediately into the mouth.

While the compound is still warm at the point of attachment of the wire, carefully align the wire with the anterior border of the key ridge which has previously been determined by palpation. Chill and remove the impression and wire index with the attachment intact. (Fig. 7.)

After gnathostatic models are poured and completed place the compound impression and key ridge pointer on the model in the position that it occupied in the mouth. Mark the end of the wire on the model on both left and right sides. Place the model in the scriber and scribe a line across the model representing the "key ridge plane." (Fig. 8.)

Check the relationship of the key ridge plane with the mesioproximal surface of the maxillary first molar. Determine the relationship of the key ridge plane with the orbital plane. Protraction and retraction are measured by the distance from the key ridge plane to the mesial proximal surface of the maxillary first molar.

This may be called protraction or retraction from the key ridge plane in contradistinction with protraction or retraction from the orbital plane.

A registration of the key ridge plane may be made more simply by a transfer with the device shown in Fig. 9. Compound is placed on sections *AA* and

softened. The device is widened sufficiently at joint *B*. Pointer *CC* is aligned with the anterior border of the "key ridge." The pointer is fixed with compound at *DD*. The device is then removed from the mouth. After the models are poured up, place the device on the model with section *EE* extended. Close section *EE* until pointer *CC* contacts the wall of the model. Mark key ridge plane.

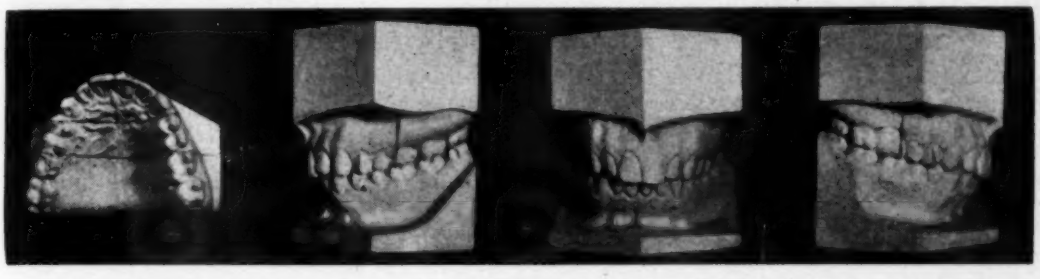

Fig. 8.—Gnathostatic model on which key ridge marking indicates correct positioning of teeth in their anteroposterior relationship, while orbital plane marking indicates bimaxillary protraction.

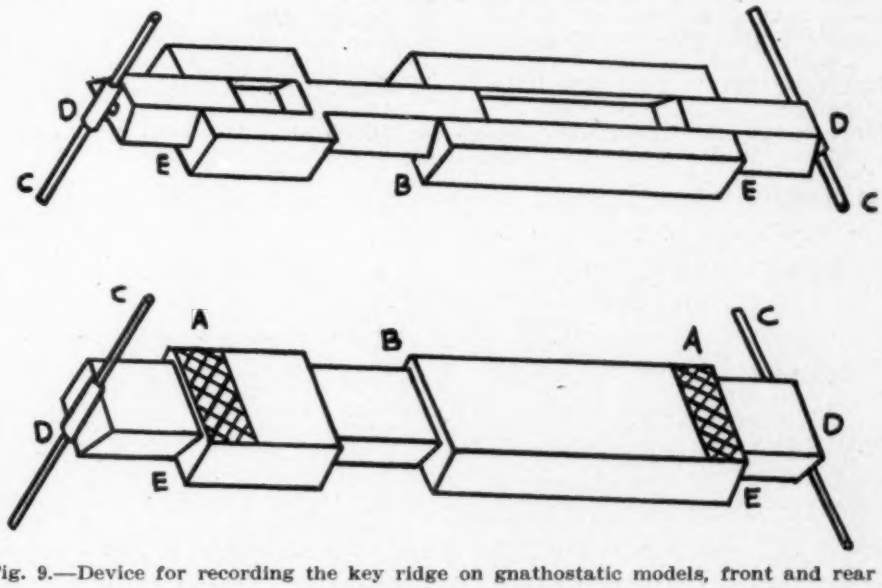

Fig. 9.—Device for recording the key ridge on gnathostatic models, front and rear views.

CONCLUSIONS

Orthodontists have the power of changing a patient's facial expression. The basis for determining the amount of change is in our diagnostic methods. With incomplete diagnostic methods we get uncontrolled changes.

Teeth, in addition to aiding the appearance of an individual, should be on a physiologically and physically sound basis. The determinants of that basis is the structure of the bony skull. The key ridge provides us with an index to an architecturally sound structure on which to center the teeth in all races and peoples.

Methods of recording the key ridge vary. Study models or radiographic orientation are insufficient and incomplete since they obviate a direct transfer

technique. Palpation of the key ridge in the patient's mouth is simple. The use of this fact permits the use of a simple transfer technique to gnathostatic models. This permits orientation of the key ridge on the cast, correlating it with the Frankfort horizontal, median plane, and the orbital plane.

The method consists of using either a compound index (Fig. 7) with small wire pointers affixed, which is guided into position by the forefinger as in palpation, or by the use of the key ridge locator described in Fig. 9. Either of these methods can be used easily and simply for locating the key ridge on gnathostatic models. The series of skulls illustrated as Figs. 1 through 6 show the development and placement of the key ridge, confirming Atkinson's findings.

Grateful acknowledgment is given Dr. George Calloway for his constructive aid and advice.

Acknowledgment is made to Dr. Edmund Appelbaum for the use of his photographs of skulls from the collection of Dr. Leuman Waugh and Dr. William M. Rogers.

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654 MADISON AVENUE

THE FACE AND ITS DEVELOPMENT. ANOMALIES OF OCCLUSION AND THE TREND TO BEAUTIFY THE FEATURES

RODOLFO TARASIDO, BUENOS AIRES, ARGENTINA

BEAUTY, inspiring source of art and science, in its inexhaustible displays, is continuously changing in its improvement. The unknown nature and the vast resources exploited by man excite his imagination, giving us the most varied nutritive elements. Likewise, they give us the most sublime and thrilling spiritual motives, which are equally indispensable for vital subsistence.

Man has always tried to imitate and surpass nature, and he has given to his work wonderful shape, beauty, and color. To accomplish his purpose, he has gone deeply into the study of sciences and has specialized in arts. The biologic sciences have suffered a great metamorphosis.

The study of races, their atavic and migratory origin, and zootechniques and biogenesis with their tests in the laboratory and out of it, have almost acquired a definite course. The vegetable kingdom has felt the benefits of science in the perfection of the methods of cultivation, and in the selection and reproduction of grains, flowers, etc. And it is impossible to forget the enormous mineral deposits with their treasures of hidden wealth and energy; and the scientist, who, in his indefatigable search for the valuable elements, has achieved a wonderful discovery, the disintegration of the atom of uranium with its extraordinary radioactivity.

To be able to grasp, to a certain extent, the meaning of natural beauty, it is necessary to cultivate and improve the art in each and every form, spiritually and intelligently.

Sculpture and painting have their greatest expression in the contemplation and admiration of the body outline, in the features of the face, and in all the expressions inspired in the sensibility of the soul.

The dentist and, with more reason, the orthodontist have a very deep concern for dental and facial esthetics; this interest goes as far back as Fauchard and Hunter, not to mention a long list of men who are registered as precursors of continuous improvement by the dental bibliography. But, although nearly two centuries have elapsed, it was only during the last decade that a sound concept about orthodontic corrections have reached a strictly scientific state. For it was Angle, the greatest contemporary orthodontist, who started his work, led by his classical classification, ordaining the anomalies of dental occlusion. This was based on the study of the normal occlusion, which established as a key to occlusion the almost constant position of the great molars in their relation to the cranium.

The possibility of aligning the teeth to obtain a reasonable esthetic appearance was considered highly satisfactory five years ago. But this procedure, equally applied and generalized to all the anomalies, gave origin to a number of failures, because the resulting protrusion caused was sometimes extremely disagreeable.

Soon after, new fundamental principles were known about the appreciation of the anomalies of occlusion, and great advance was made with the intermaxillary corrections which affected the mesiodistal relation of the dental arches. Mindful that normal occlusion was an extraordinary improvement and benefit for balance and harmony of the facial lines, the orthodontists enthusiastically considered what their artistic results would spiritually mean to a large number of people.

The study of the face offers to the orthodontist, in its manifold manifestations, an extraordinary importance in its development, conformation, and varied expressions of the countenance. This importance is extraordinary because he can study any deviation directly on the teeth, in the mouth, and on the jaws; and, if any treatment is required, its results will enhance the beauty of the face or, on the contrary, derive other consequences that could appear.

His speciality is of great responsibility, because we must acknowledge that the teeth and the mouth are structures of captivating beauty when their shape and arrangement are in harmony with the features, the shape, and the proportion of the face.

We must bear in mind that many of our clients come to us looking forward to the possibility of correcting the facial asymmetries derived from malocclusion. And, there is no one more capable than the orthodontist to modify the aspect of the face, making it more pleasant and, in many ways, more beautiful. The importance of the facial asymmetry depends on a degree of importance on the dental displacements which can be of little consequences or they can be completely altered, sometimes even being repulsive to the sight. If this is the case, the disadvantage at which the person concerned is placed is beyond a doubt, because it creates in him or her an inferiority complex which affects his or her best aptitude to struggle successfully in life and be able to enjoy all the spiritual emotions connected with his or her intellectual capacity.

The aim has been to find the formula to resolve the great problem presented by malocclusion and the deformities of the face. But the great difficulty rises when we want to establish the normal model or the ideal type, because, though it is true that many faces bear a resemblance, there are a lot which are so different from all the others that the solution is impossible. Among the native population belonging to the same race or type of the same ancestral origin, a perfect charactertistic type could be found, having similar features and conformation. But the cosmopolitan conglomerate of our actual ethnic origin makes it difficult to appreciate all the variations which are subject to so many blood streams; and the same could be applied to determine the normal conformation corresponding to each and every one of them.

If we look through a scientific prism, we find that there is no beauty in the face if there is no balance and harmony in the features. There cannot be symmetry and beauty without normal occlusion, in perfect relation to the architectural line of the cranium, and according to each individual type of beauty. It is very important, for this reason, to understand the true meaning of the normal occlusion, which is the exact relation of each tooth to the cranial anatomy and to the opposite arch, its vertical inclination, the shape of the dental arches in its anteroposterior relation to the opposite arch, and to the cranial anatomy. It is also necessary to understand the degree of the vertical extension of the bite and a perfect correlation and balance of all the adjacent and complementary structures: bone, muscles, etc. But, if nothing exists or has been created which can appropriately be taken as a fixed principle according to which we can exactly adjust our orthodontic procedures (methods which, taking into consideration the shape of the mouth, the face, and the arrangement of the teeth, keeping perfect balance and harmony in the three dimensions), then we must cease trying and applying the utmost artistic sensibilities which, together with the knowledge of normal occlusion mentioned above, could restore proportion, harmony, and beauty to the face.

We have been guided up to the present by Angle's Law, which determines the best balance of the features and which reads: "The best balance, the best harmony, and the best proportions of the mouth in its relation to the other features require that there shall be the full complement of the teeth and that each tooth shall be made to occupy its normal position—normal occlusion."

The teeth and the alveolar processes are important factors in the development and evolution of the face, and the mouth is one of the principal elements.

Many investigations proved that the human face varies, no matter what the dental occlusion is. This is why Hellman[1] asks himself "(1) What constitutes a normal face? (2) What constitutes an abnormal face? (3) What are the differences which distinguish the abnormal face from the normal face, about which all orthodontists are so much concerned?"

To say that a face is normal because the occlusion is normal or because a face denotes harmony and balance does not indicate that a measure or a model has been found, because "normal" is something abstract; it is all too vague. On the other hand, there are disfigured faces which have perfect occlusion. It has been impossible up to the present time to establish with any certainty the particular reasons that make faces differ. There is not a model or a measure to guide us, and it is precisely this model that science is searching for. But, following closely the constant and abundant contribution to the study of such a fascinating theme, it can be realized how deep is the problem confronting the investigators who devote so much of their time in attempting to solve the development problem, how to prevent its disagreeable consequences, and the scientific course to follow in the treatment and correction based on something more tangible than the normal ideal. Among the most important essays published, those belonging to Broadbent and Hellman, deserves to be mentioned a short summary which is given in this article.

A brief description is given here, with some aspects of the formation of the face in which actively participates some biologic and dental factors which are the result of a complex process that requires twenty years to be accomplished.

Growth is the result of the cellular multiplication starting from a generating cell which bears the specific functional character of each organ, likewise, the entire pecularities inbred in the same human being.

The evolution of the facial growth depends highly on the hereditary and functional influences, impressing a familiar and individual characteristic which gives the complete expression of a person's personality in accordance to the surroundings in which the person has lived.

The development of the face, and especially its close relation to the cranium, is a consequence of the same active growth of the face which is influenced by the growth of the cranial bones upon the maxillary bones. This helps the development of the middle third of the face, but, on the other hand, the mandible is not directly favored by any pressure whatsoever, less the intermaxillary functional action of the cusps of the teeth.

The face grows and increases in size in three dimensions, in vertical, transversal, and anteroposterior planes.

The form of the face is also a consequence of the development of the alveolar process and of the teeth, temporary and permanent ones, which are erupting.

It is equally a physiologic process characterized by periods of slow development alternating with those accelerated in bone development similar to others registered in different parts of the body. As T. Wingate Todd[2] says: "The evolution of growth sometimes implies changes, readjustment of the isolated parts, such as the local increase of certain dimensions, which can be altered and stopped by disease, undernourishment, or other causes."

F. B. Noyes[3] says: "At birth, the maxillary bones are but a framework, a sort of carton divided into compartments, in each of which is housed the germ of a tooth, for at that time these bones contain, partially-formed, all of the temporary teeth and all of the permanent ones, except the second and third molars.

"As teeth emerge from the bone, they are carried occlusally by the growth of bone. The incisors at the middle line appear first, and then each tooth proceeds distally. The incisors and, therefore, the entire denture continue to move downward and forward in the upper jaw, and upward and forward in the lower jaw through the entire period of development. The temporary denture is completed in about three years but, during the period of its function, continues to move occlusally and forward largely under the influence of the growing permanent teeth."

Tooth growth is a physiologic process also characterized by cycles of rapid, slow, and periods of maximum development. There are variations in the time of eruption and in the evolutive period until complete formation.

Hellman[4] says: "It has been proved that in normal occlusions dentition is completed earlier and in shorter time. The evolutive periods of eruption in normal occlusions differ from those observed with teeth in malocclusion. In cases of feminine normal occlusions, dentition is completed earlier than in the male, but, it is the reverse in those affected by abnormal occlusion."

There is not a real correlation of time between facial bone development and tooth eruption; the changes in evolution take place with some variations, the process anticipating one or the other indistinctly.

Herefrom will be mentioned in a general way some of the normal biologic factors in the formation of the face; but, as orthodontists, our anxiety and responsibilities keenly concern us in all those phenomena which are related to the etiology of malocclusion and which we know have a direct influence on the features. That is why we shall have to mention some of the most important causes which are related to the development and abnormal formation of the face.

It is unnecessary to mention authors, when science acknowledges the predisposing influence of inheritance and the changes that take place from early life, from conception to adolescence, bringing about organic and functional changes which affect the body as a whole, exaggerating or slowing down its development.

The tendency to transmit certain pecularities and racial characteristics which partially or totally appear in descendants is considered natural, either from a physical or moral point of view. The hereditary influence has been definitely proved in the development of the face, in the resemblance of the parents, in tooth malformation, in the peg-shaped tooth, and in the absence of tooth germ, etc. All these are undeniable evidences, but they can be modified by the regulating biogenetic activity of the progenitors.

All the factors functionally active have undoubtedly an important influence upon growth of the bones and upon the development of the teeth and structures that form the dentofacial complex.

In other words, the anatomic constitution and functional activity of the dental mechanism are very important factors in the formation and development of the face and mouth.

Normal occlusion of the teeth is kept by the harmony in size and the intermaxillary relation of the dental arches in their complementary intimate activity of the inclined occlusal planes which coordinate one with the other through the action of the labial, buccal, and lingual muscular forces.

The arrangement of the inclined occlusal planes helps in the normal shaping of the arches, which, in turn, distribute the functional stress to the basal bone tissue. The hammering of the mandible, as a result of mastication upon the grinding surfaces, transmits its stimulating energy to the bone structure. This is responsible for the formation of new elements, fibrous tissue, and bone cells, in proper quantities and in the right places to prevent the dangers and tendencies of displacement.

If normal contact is altered in one or more teeth, thus breaking the stability and cohesion which maintain the shape of the dental arch, any variation

will be in accord to the degree of importance of the affected elements. Each tooth is a unity of a complex mechanism which, if lost or shifted from its right position, will bring into action other forces which break the balance of occlusion, producing changes in the development of the face.

Normally, the almost vertical direction of the longitudinal axis may vary its angles in such an unusual way that the position of the roots will not only bring alterations in the alveolar bone structure, but also great distortions in the mouth and in the features.

Among other functional factors that stimulate and affect the growth of the bones, the structure of the face, and position of the teeth, we must mention muscular activity, either in the masticatory process or in different psychic and emotional reactions, reflected in the face by the muscles of expression. This also applies to the important problem of the normal and abnormal habits.

When the muscles are well balanced and they function harmoniously, the result of their contractions exert a beneficial stimulation to the structures to which they are attached, growing in normal position and conformation. On the contrary, if the muscular activity is perverted, it is possible that certain structures can be abnormally formed and developed. The shape of the arches and their anteroposterior relation, which have such an important influence on the normal features, depend mainly on the muscular balance. But, if this is altered by bad functional activity, the ill-balanced muscular force will affect the structure of the jaws, causing dentofacial anomalies. To swallow incorrectly, to suck one's finger, or to bite one's cheek are typical examples of the above-mentioned statement.

E. M. Setzer[5] quotes J. C. Koch, who makes the following deductions: "The inner structure and external form of human bones are closely adapted to the mechanical conditions existing at every point in the bone.

"The inner architecture of normal bone is determined by the definite and exact requirements of mathematical and mechanical laws to produce a maximum of strength with a minimum of material.

"Normal bone structure and its functional adaptability logically lead to the conclusion that longstanding deviations of the bones are followed by a new adjustment, in accordance to its new function. Since each and every bone reacts in the same way to the same mechanic laws, we could deduce that the outer formation of the jaws is equally adaptable to its functions. And from this it must follow that we may regard abnormalities of bone form as "physiological adaptations of the structure to pathological mechanical conditions and, therefore, to pathological function."

It is said that muscular development is a consequence of its function or work, and atrophy is the opposite.

Muscular hypertonia and hypotonia of a variable degree have noticeable results in development and conformation of the face. The effects of muscular hypertonia are characteristic in cases of Class I, in which it is easy to see the muscular tension of the lips and cheeks, with a midshape dental arch and the teeth bunched together, rotated, etc. Another example is given in cases of

Class II, where the bulk of the lower lip presses against the anterior segment, thus opposing to the normal forward development; this also exaggerates the curve of Spee and, resting under the lingual surface of the upper incisors, favors their labial tipping.

Constitutional diseases and disorders of nutrition in their different aspects, either due to lack or insufficiency of vitamins or mineral elements or those of an endocrine origin, diminish the individual resistance of the body, affecting the perfect constitution of the bone tissue, the conformation of the dental arches, and breaking the balance and harmony of the face.

Once, while superposing for comparison some x-rays of the cranium with the purpose of observing the changes brought upon the teeth and jaws by an orthodontic treatment, Dr. B. H. Broadbent[6] realized, while making them coincide in similar parts and landmarks of the bones, that even though the normal occlusion prevailed, the direction of the development of the face did not correspond as a whole to the one taken as normal.

Since then, Broadbent, as Director of Research of the Bolton Study at the Western Reserve University, has accomplished an interesting technical plan for scientific and practical investigations which enables the measurement of the head on living subjects, just as the anthropologist measures the cranium.

With the wonderful equipment employed, his results have confirmed the need of establishing the known biometric relations of the teeth and jaws in parts more definite than the face itself. We must point out that this roentgenographic or teleradiographic technique does not depend, like in other systems, upon measurements taken across the surface of tissues of unknown thickness.

I have considered convenient to include this valuable contribution to the study of the development of the face, because evidently it unfolds a full knowledgement of biology about many internal structures. For this reason, we must emphasize the value of the wonderful Broadbent technique, which has been used in a series four times a year during twenty years on a great number of individuals. This made it possible to follow a detailed and reliable proof of certain facts related to the growth of the bones of the face, tooth eruption, impaction of the third molar, etc.

To see and to judge on living subjects is of such importance that T. Wingate Todd[7] once pointed out: "The investigations carried on on children's bodies who had suffered chronic diseases or whose development had been affected during a long period, are inadequate specimens, and if they could not be performed on those dead by accident or acute diseases, then it is better to carry on the investigations on living human beings."

The device employed consists of a teleradiographic cephalometer, to which the patient's head is adjusted by means of two auricular rods, and a nasion rest adapted to the root of the nose. To this head holder the film is adapted in such a way that if one wants to modify its position, a lateral and a frontal image with all the details in the three dimensions can be obtained. In order to make easier the reading and interpretation of these images, it had been

necessary to determine and establish certain fixed points to be used as references. This has also been applied in the comparative study among different individuals.

After a great number of skulls were studied, it was considered that the sphenoidal area and the cranial base were the most stable in relation to the other zones of the lower face that are very variable due to its rapid growth.

On the film the Bolton-nasion plane is traced; this plane goes from the junction of the frontal and nasal bones to the Bolton point which stands in the highest portion of the notches at the posterior end of the condyles on the occipital bone.

From this Bolton-nasion plane, a perpendicular line is drawn toward the sella turcica, and in the middle part of this line we mark the point of reference R. If the perpendicular that goes from the sella turcica and passing through R would be prolonged downward to the level of the occlusal plane of the tooth, that oblique line would be practically useless. As a complement of a real practical value in the determination of measures and changes that take place regularly and with a certain intensity in the facial zone, it is convenient to add some other elements, such as the horizontal Frankfort plane and the orbital perpendicular plane which offer easier and thus more acceptable points of reference.

Doctor Milo Hellman, Professor of Columbia University, New York, worked out a method to appreciate the facial growth and changes. It consists of a chart based on the measurements of certain surfaces and some points of the face; this chart is compared with another diagram considered as a normal type, that is, the basic model, or, to use the author's own words, "the normal standard." To have a more accurate study and description of the normal standard, Dr. Hellman thinks that the evolution on the formation of the face is related to the development of tooth eruption and not to the age of the patient. Consequently, he establishes seven different periods which are called; first childhood, second childhood, infancy, adolescence, maturity, old age, and senility.

Besides the normal standard made for each period, a chart for each sex must also be prepared; it would also be convenient to make one for each class of anomaly.

Hellman[1] experimented on a student population of 308 young adult males; 234 of these, who had 32 teeth, were selected; and from this group 62 whose occlusion was normal were selected; in all the rest there were anomalies of occlusion.

With proper calipers he measured the different points and planes of the face. These are registered in the first column of his chart. With these figures which appear in the second column, he drew a diagram which represents the normal average and which appears on the black central line. The figures of the third column form the table of the expected percentage for the standard deviations.

Of course there are differences among any group of individuals, since the faces and their measurements are not exactly the same, and so the normal aver-

age cannot be invariable, and we must admit reasonable differences. In this respect he established on both sides a limited zone, by means of a dotted line, which is called the limit of the standard deviation, that is to say the utmost deviation of the normal standard; this zone takes the shape of a symmetric polygon. The surface between those limits is the variable zone of the deviation of the standard, and all the measurements that fall into this zone are considered normal. Among the measurements registered in this group, only the 68 per cent of the cases can be included in the normal type; the rest of the measurements which surpass this zone reaching up to the 32 per cent must be divided into two, giving a 16 per cent to the big or supernormal ones to the right, and the other 16 per cent to the smaller or subnormal ones to the left. The standard diagram is drawn by a central vertical line A, which is the normal average of the dimensions, represented in the second column in the scale of the chart. The variable dimensions formed out by the deviations from the normal standard (whose figures appear in the third column and that are also considered normal) are marked down by dots on the horizontal line in the appropriated distance measured in millimeters on the plus sign if they are bigger, or on the minus sign if they are smaller. These dots on each side are joined together by the broken line thus giving origin to a polygon, which is divided by horizontal lines to make the reading easier in each sector. The practical value of this method consists of the possibility of making an appraisal of any particular shape of each face: (1) those with the dentition in normal occlusion, (2) those which have the dentition in malocclusion, and (3) those whose personal features are characterized by dentition of normal occlusion and that differ from those having dentitions with different types of malocclusion.

When the dimension of a certain feature corresponds to the average, it is plotted on the straight vertical midline. When there is a difference from the average, a dot is placed at the distance and to the proper side of it. Thus, if the dimension of any particular feature is larger than the average, the dot is placed to the right or plus side at the distance indicated by the number of millimeters of the difference; if smaller, to the left or minus side.

Then, by joining the dots of all the features of that particular individual thus plotted, there is producted a sort of "wiggle" and, in this manner, the facial dimensions can be studied and appraised, showing a large variety of significant facial differences.

CONCLUSION

Summing up the real meaning of the technical progress of our science, it is evident that the advantage obtained in its short existence has allowed us to know the complex biologic process of occlusion which is considered up to the present as its foundation stone. There is a close relation between growth and formation of the face, the beauty of which we exalt as one of the greatest aims in life and through which we express the most wonderful illusions of love. As the face is the mirror in which are reflected the highest fidelity the deeper feelings and the emotions of the soul, with its happiness and sorrow,

the orthodontist works earnestly with a noble aim of perfection, as he is aware that he will help the coming generations with the possible solutions to their happiness.

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SCHOOL DENTAL HEALTH SERVICE IN TEL-AVIV

M. LAUFER, DR. MED. DENT.,* TEL-AVIV, PALESTINE

SINCE science has not yet shown us the way to immunize the deciduous and permanent teeth of our children against caries, there seems to be no other choice than to fight caries at the earliest possible moment that it invades the tooth. Every dentist who believes in social responsibility will concede that the fight against caries is not only a medical but also a social question, and therefore every method ought to be measured by its success in reducing dental decay among children of whole communities, not just of single schools and institutions.

In 1936 the Department of Education of Tel-Aviv Municipality took over the responsibility of caring for the dental health of its school children. A small existing dental clinic was enlarged and started to treat school children. According to Kantorovicz, every year an additional grade should be included, till after 8 years all school children should leave school with healthy teeth. From the beginning, the budget proved to be too small to cover all the necessary expenses for the realization of this considerable task. So only the children in the first grade were examined, not all those found in need of help were treated, and every systematic effort was drowned in a sea of progressed caries. In addition, the threat of bombardments after the beginning of the war reduced group visits to the clinic. Twice Tel-Aviv was bombarded and under the paralyzing effect only polyclinic work—treatment of children with paining teeth and of indigent parents—was done.

After the threat of war diminished, new and vigorous efforts were undertaken to combat caries. Already one additional clinic was founded in the southern district of the city. Two years later, a third one in the north, and in the third year of systematic work a fourth clinic in the West district was set up. In variance with Prof. Kantorovicz, formerly head of Bonn Dental College, now in Istanbul Dental College, we included in the first year (1942) all four grades under systematic control. Some 10,000 children were examined, 40 per cent of whom were found to need treatment. Only 5 per cent remained with untreated permanent teeth. The main points of Kantorovicz' system were followed. Treatment was given during schooltime, and as it rarely causes pain, children prefer visiting their school dental clinic to sitting in the classroom. Visits outside schooltime shrink to some 20 to 30 per cent of all children needing treatment. It is therefore a vital point if full success is intended, to insist on treatment during schooltime. Treatment is offered to all children without regard of social standing, but is not obligatory. Children who state that they are getting treatment from their family dentist or Workers' Sick Fund clinics are not admitted to treatment in the municipal clinics. It may be

*Head of Municipal School Dental Clinics, Department of Education, Tel-Aviv Municipality.

added that only 20 per cent of those children who state that they are getting private treatment outside our clinics do actually get treatment and, still less, finish it.

A very important point for treatment in schooltime is the fact known to every worker in the field of school hygiene that children coming in a group from school cause much less difficulty than when accompanied by their parents. Treatment of deciduous teeth had to be reduced to those which spread decay by contact with permanent teeth, mostly canines and second molars. Decay in deciduous teeth proximal to permanent teeth had to be eliminated by fillings, extractions, or by grinding down to prevent any premature loss of deciduous teeth.

An important experience gained in the beginning of our systematic work was not to remove during group visit any deciduous teeth, even when the removal could be performed with the greatest possible ease. Otherwise, report of extractions spreads terror among the children in the waiting room. We prefer to ask the child to visit with his mother for the extraction. Dental treatment of children whose grades were not yet included in the systematic work was a special problem which could endanger the whole success if not solved by long-range considerations. In the beginning there are seven or six grades, according to Prof. Kantorovicz, and only after six to seven years all grades are included. We reduced this time to three years.

There was not the slightest possibility of giving universal treatment to all those grades not included. We accepted for treatment only those children with paining teeth or defective front teeth who could not afford treatment by private dentists. Extraction of permanent teeth was done only with the agreement of the parents. The same precaution was used when parents accompanied their children for treatment of deciduous teeth. Of course, there were a number of children who refused or discontinued treatment or did not appear at all at the school dental clinic and also those who told about private treatment. Their number amounted to some 7 per cent of all examined children (2.5 per cent claimed private treatment, leaving 4.5 per cent). All those cases were noted in a special card index for follow-up. This special card index contained all cases which had to be followed up for various reasons, ranging from wearing of spectacles to contagious diseases, nervous or heart troubles. Those dental cases mentioned here as well as those needing orthodontic treatment were included in the special card index for the general nurse. Her task was limited, apart from dental health propaganda, to those cases where the school dental service had no success. It might be added here that arrangements for group visits were made directly with the head of the school or later, with the teachers. The general nurse, overburdened with every sort of work, will fulfil her work much better if it is reduced to a feasible task. We soon found out that it was quite impossible for her to organize group visits which included, on the average, more than 50 per cent of the entire number of school children.

This second combing-out of dental defects by the special card index was thought sufficient for our responsibility. We did not favor any means of coer-

cion. In the vast majority, parents cooperated willingly. In some schools the principal did not allow children to enter school if they did not bring with them a certificate on finished treatment issued by our clinic or a private dental clinic.

As a rule, one school dentist controls a maximum of 6,000 children. The head dentist is on full-time service. As told previously, we preferred decentralization of clinics as it procured more efficiency. Schooltime lost by treatment and on the way to the clinic was diminished, and the distribution of the work was more even. The ideal would be treatment in the school itself, and, apart from our central clinic, the three other clinics were set up in the biggest schools of their respective districts. In this way there is no loss of worktime on account of bad weather, children do not lose any time on the way to the clinic, there are no dangerous roads to cross, no responsibility on the heads of the schools for accidents, and no need for difficult arranging of convoys for group visits.

In order to avoid great distances, we set up mobile clinics which moved to the schools themselves, but only to those distant from the four stationary clinics. When all of the neighboring schools finished treatment, the mobile clinic was loaded on a van and moved on or returned to its base headquarters, the stationary clinic of the district. An electric drilling machine on a column was used (not the usual type attached to the wall), besides the usual equipment. We introduced these mobile clinics in the second year of school dental service, and the experience was excellent and met with nothing but enthusiasm from the heads of the schools and the parents.

We also objected to a big central clinic instead of a chain of decentralized clinics because we found out that personal relations between child and dentist could not exist in the same degree as in the decentralized one-man clinic. Costs of our dental service are approximate fifty cents per child per year covering the entire number of school children.

A private dentist might point out that adequate service can be given only by checking up by x-rays on incipient decay for three months and even by inserting gold inlays in deciduous teeth. We agree on the whole but state with the same emphasis that only a tiny fraction of the population can afford such a service and that a still tinier fraction actually gets it. But systematic school dental service which wipes out dental caries in permanent teeth up to 96 per cent of all children and is financially no unsurmountable obstacle to any municipality has still to look for a better rival.

A word to parents: they might fear loss of human contact between child and dentist by "mass" treatment in school clinics. Our personal experience shows just the reverse. Every dentist is attached to some school. He becomes an integral part of the school staff. The dentist must have special human attributes besides his professional qualities if he wants to succeed with schoolwork. And only such dentists should be appointed for schoolwork. Parents who fear loss of human contact should accompany a school dentist on a walk in his district. Not a child will pass without hailing his dentist. It is significant

that private dentists occasionally bring their own children to the school clinics to have them treated there. Most children themselves prefer the school clinic to private dentists. It seems to us an important educational point that a municipal dental clinic which receives all the children safeguards the principle of democratic education better than the setting up of pauper clinics for a third of all the school children. *Dental Items of Interest* published an article* stating that half of New York school children cannot afford private treatment, and only 3.6 per cent of all children receive treatment of their teeth.

In addition a universal school dental clinic is much more efficient than splitting up the children in different economic groups and sending one group to private dentists. According to Dorothy Nyswander in *Solving School Health Problems*† 12 per cent failed to appear at their private dentists for the examination. In a universal school dental service the dentist visits the children in their classroom and examines them all. Those absent on account of sickness visit the clinic together with those who come to be treated.

The most frequent point of controversy in school dental service is treatment of deciduous teeth. This explains also the great variance in the percentage of children needing treatment: 79 per cent in the Astoria District, 55 per cent in Tel-Aviv. In the first year of the introduction of systematic school dental service we followed Prof. Kantorovicz' scheme closely and dealt only with caries of deciduous molars and canines approximal to permanent teeth. In the second year we decided to treat the second deciduous molars in every case from the first grade, not only with distal but also central or mesial caries, but strictly only incipient decay. Our reasons were: Neglect of those cases causes much more avoidable work in later years when treatment cannot be put off any longer on account of contact with the first permanent premolars. Besides, progressed central or mesial caries in second deciduous molars may cause pain, abscesses, and, finally, premature extractions. That means severe disturbances of child-dentist relations, deformity of jaws, and need of orthodontic treatment.

We had to ask, of course, if the inclusion of the second deciduous molar into routine treatment would not endanger fulfilment of plans for systematic universal control. We treated only incipient caries with fillings; progressive decay was dealt with by grinding down. Instead of some 30 per cent of all children in the first grade, some 65 per cent needed treatment. Broadening of the systematic program meant for the first and second grade, at least, twice as much time as the minimal program according to Kantorovicz. Our answer was:

1. In the first years that systematic treatment is introduced only a limited number of grades is under control (according to Kantorovicz two, according to our experience four). The school dentists are therefore not yet fully charged up to their capacity, especially as a great number of first-grade children have their first-permanent molars not yet erupted, therefore not yet decayed. As

*Frank, Samuel M.: Dental Health an Important Public Health Problem. D. Items Interest 66: 348, 1944.

†New York, 1942, The Commonwealth Fund.

we started in the first year to control four grades, we restricted treatment of deciduous second molars to the Kantorovicz minimum. But in the second year we enlarged this program as described here.

2. Treatment of incipient decay in second deciduous molars turns out to be a good long-term investment as in later years these teeth do not give any trouble either by complicated treatment or by disturbing child-dentist relations. That means that the dentist will not lose so much time in later years overcoming child resistance to treatment of other teeth. It is Kantorovicz' own principle of the smallest defect applied to the treatment of the deciduous second molars which are of so great an importance to the development of healthy permanent teeth in well-formed jaws.

3. A second examination and treatment in the first and second year of school dental service might be abandoned in order to balance somewhat the loss of time by more extensive treatment of deciduous molars. Only when otherwise the annual plan for systematic treatment would be in danger of not being fulfilled may such a compensation be considered. We think it advisable not to examine and treat twice a year in the introductory years of universal systematic school dental service. This sounds somewhat startling, but these are the very important reasons: Examination and treatment of at least 50 per cent of all the children during schooltime (condition No. 1) constitutes considerable disturbance in the course of learning. Cooperation from heads of schools and teachers has to be gained. They will resist less when we do not insist dogmatically on the maximal program of biannual examination and treatment in the first years.

Experience in 44 different schools showed us how the attitude of teachers and heads of schools changed from passive tolerance to most active cooperation in the course of two years only. This point of avoiding shock and resistance by forcing maximal programs must be considered very earnestly if we want to create good will and tradition. Only they will procure a base which will allow later the absolutely necessary biannual examination and treatment.

Our private dentists posed the questions: How is our position affected by universal school dental service? The fear of losing patients was not justified. School dental service covered a reserve of patients untapped to some 80 per cent (according to our figures) by the service of private dentists. According to Dorothy Nyswander, the most intensive school propaganda could not bring the number of healthy children to a higher percentage than 55 per cent. Second, the setting up of school dental clinics absorbed dentists who were hitherto occupied in private practice or would have tried otherwise to be in private practice, besides the question of dentists returning from the army after the end of the war. Competition will thus be diminished by creating a new service.

The prophecy of E. G. McGavran (AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY, July, 1944) in "Future Developments in Public Health" was fulfilled even before it was published. He predicted in an extraordinarily lucid article that public dental service will augment occupation of private dentists. This is exactly what happened in Tel-Aviv. Never before had so many

children of wealthy parents gone to the family dentist as after we introduced our service of examination and treatment in the schools. They did not know before that they had decayed teeth. Systematic school dental service has a high educational value, as a child leaving school will be used to biannual examination and treatment. They will continue to undergo this in a higher percentage after leaving school than will those who did not enjoy systematic treatment. This is another reason for more intensive occupation of the private dentist than before.

The decisive point is: On the one side, half measures and an artillery barrage of notices and visits to the parents by the dental nurse did not crumble the walls of indolence and stop dental decay. On the other side, universal school dental clinics wiped out caries in a percentage not yet reached in any other form of approach to this central problem of public dental health.

Editorial

The Meeting of the American Association of Orthodontists, 1946

DURING these postwar times it is difficult to secure hotel rooms in sufficient quantities to accommodate a convention of any size. Notwithstanding, President Archie B. Brusse and his capable staff were able to secure the Broadmoor Hotel, at the foot of Pike's Peak and in the shadow of Cheyenne Mountain, for the Forty-Third Annual Meeting of the American Association of Orthodontists on Sept. 30, Oct. 1, 2, and 3, 1946. It was possible to secure accommodations in Colorado only by choosing a time of year between the tourist and the winter season, and for these dates, the Broadmoor agreed to take the 1946 meeting.

The annual meeting of the American Board of Orthodontics began Thursday morning, September 26, and was held in the Antlers Hotel in Colorado Springs. This group gives examinations for the certification of orthodontists.

Registration and a meeting of the Board of Directors took place on Monday morning, September 30. The special education exhibit of the proposed Service for the Division of Crippled Children attracted wide attention. This display was prepared by Dr. Robert A. Downs and was sponsored by the Rocky Mountain Society of Orthodontists.

On Monday afternoon, the annual golf tournament of the American Association of Orthodontists was staged on the championship course of the Broadmoor Hotel. This tournament, under the direction of Dr. J. Lyndon Carman, chairman, proved to be one of the high spots of the entertainment provided at the meeting and one in which a great many members of the Association participated.

The formal scientific session started Tuesday morning, with Dr. Henry F. Hoffman, president of the Rocky Mountain Society of Orthodontists, officiating as chairman. The entire day was devoted to a scientific program. In the evening Indian Ceremonial Dances were featured by the world-famous Koshare Indians. A fuller description of these Indian dances will be found on page 650 of this issue of the JOURNAL.

Wednesday was Pacific Coast Day, and Dr. J. Camp Dean, President of the Pacific Coast Society of Orthodontists, presided over the meeting. In addition to the regular program as announced previously, a round-table luncheon under the leadership of Dr. George W. Hahn of Berkeley, California, proved to be quite popular. Reports of these various discussions will be published in the JOURNAL at a later date, as these reports are assembled by the Editor and the JOURNAL staff.

The Golf Club and Hawaiian Village provided the scene for the President's reception, and the annual banquet and dance offered entertainment in the main dining room of the hotel on Wednesday evening. This event was an outstanding success as usual.

Dr. Brooks Bell, President of the Southwestern Society of Orthodontists, presided over Southwestern Society Day on Thursday, and the scientific session proceeded as on previous days.

The Ketcham Award, given annually for outstanding contributions to orthodontic advance, this year was conferred upon Dr. R. C. Willett of Peoria, Illinois.

The meeting was well planned and carried out; the program was excellent. Dr. Brusse, his staff and various committees, as well as the Rocky Mountain Society of Orthodontists, received a well-deserved vote of thanks for their work and efforts in behalf of the meeting.

The desire for recreation in this colorful part of America was manifest by many orthodontists. Some went fishing in the heart of the Rockies; others made an excursion to the top of America's best-known mountain, Pike's Peak; while others stayed on after the meeting so that they might enjoy the full splendor of the Rockies in the fall of the year.

The ladies were kept well entertained by the activities of the Ladies Entertainment Committee, with luncheons, colorful trips, and other activities that made them enthusiastic about their sojourn in Colorado. One high spot of the meeting was the luncheon on the first day under the direction of Mrs. Archie Brusse, when Mrs. A. H. Ketcham attended as guest of honor.

The newly elected officers of the Association are: Earl G. Jones, President, Lowrie J. Porter, President-Elect, G. Vernon Fisk, Vice-President, and Max E. Ernst, Secretary-Treasurer. The nominees were: Max E. Ernst for President-Elect, William Humphrey for Vice-President, George Herbert and George Moore for Secretary.

H. C. P.

Department of Orthodontic Abstracts and Reviews

Edited by

DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

Deglutition and the Teeth: By R. Ernest Rix, L.R.C.P. (Lond.), M.R.C.S., L.D.S., *D. Record* **66**: 103-108, May, 1946.

Let us assume that there is neither food nor drink to be swallowed and that deglutition is being performed merely to aid drainage of the nasopharynx and to moisten and refresh the oral and pharyngeal mucous membranes. Such an act can be repeatedly witnessed in people engaged in conversation. It is initiated by voluntary effort, but when once started the process continues reflexly.

This act of swallowing unassociated with food or drink, one might call it the refreshing or basic swallow, is an act which can be modified when food or drink is being dealt with.

Since the wave of movement soon passes away from the neighborhood of the jaws, a brief description of the earlier movements is all that need concern us. The lips are brought together. The soft palate is raised and its upper and back wall becomes a tense sloping roof. The nasal cavity is closed posteriorly by the approximation of the walls of the nasopharyngeal isthmus. There is a consequent momentary cessation of respiration. The lower teeth are brought up into occlusal contact with the uppers.

Now as these structures are thus preparing for the act of swallowing, the tongue by the aid of its extrinsic and intrinsic muscles is spread and raised, and its front and sides sweep up the lingual surfaces of the occluded teeth and their supporting structures. The whole dorsum of the tongue comes to lie in contact with the palate. Posteriorly the dorsum forms a seal against the soft palate.

Then occurs a sudden and comparatively powerful contraction of the mylohyoids in the floor of the mouth, which thrusts the spread tongue hard against the teeth and palate. Any saliva collected on the tongue is squeezed backward through the isthmus of the fauces.

The spread tongue, thrust with some force from below by the contracted mylohyoids, is operating in a rigid chamber formed at the sides and in front by the occluding teeth and their supporting bone. The chamber is roofed over by the bony vault of the palate, and posteriorly by the tense, sloping soft palate. The tongue operates best in a rigid cavity, and it might be mentioned here that, with the occluded teeth providing the front and side walls, the lips and cheeks on the outside of the walls are not particularly active. There is no need for them to be.

It is necessary for these rigid boundaries to the remembered for it is hoped to show that, in certain individuals, there is an alteration of them when the basic act of swallowing is being performed.

When tough fibrous food is masticated and swallowed, the actions already described take place with more vigor. The finely divided and ensalivated frac-

tion is separated out and scooped up on to the dorsum of the tongue which becomes hollowed out for its reception, and periodically a powerful contraction of the mylohyoids acting on the spread tongue in its rigid chamber thrusts the bolus back through the fauces. That fraction of the food not yet sufficiently finely divided is meantime trapped and held partly by the occluding teeth, and partly by pressure of the front and sides of the tongue against the rugae and the corrugations of the lingual surfaces of the occluding teeth. A little of it may be shut off in the buccal sulcus. The lips and the cheeks at the moment of swallowing are not in a particularly active state of contraction, though up to that moment they have been active in helping to guide and hold the food in position while it has been subjected to chewing.

An important though hidden modification in the position of the teeth occurs when juicy foods and soft prepared foods are swallowed. After a ripe pear, for instance, has been partly divided by the teeth, the juice is sucked from it and swallowed with the upper and lower teeth separated. The tongue, in deglutition, on these occasions does not function within the usual cavity. Its periphery at the sides and the front comes in contact with the cheeks and lips where the remaining portions of pear will allow. Instead of the front and sides of the cavity being the occluded teeth, their place is taken by the lips and cheeks, the muscles of which are contracted to recreate a rigid though somewhat larger cavity in which the tongue may act efficiently. This "teeth apart" modification of the basic swallowing act is frequently evoked during the course of a meal as foods of a juicy or soft character are taken.

To return to the basic swallow itself, there are children who invariably perform this act differently from the one already described. There are probably several variations, but I will describe one that occurs frequently. It is really similar to the modification of the basic act which is used for the swallowing of juicy and soft prepared foods.

The essence of the difference between the normal basic swallow and the particular atypical swallow is that the teeth are not placed in occlusion. The spread and thrust of the tongue take its periphery through the separated teeth until it comes into contact with the cheeks and lips. To go some way toward creating a firm walled cavity for the tongue to act in, the muscles of the lips and cheeks are put in tension. With a little practice one can tell whether the teeth are closed or separated during an act of swallowing by watching for the increased activity of the lips which is demanded when the teeth are held apart. One may have read in orthodontic texbooks of the habit which some children exhibit of contracting their mentalis muscle, causing a dimpling of the chin and some pursing of the lower lip. The books state that irregularities in the lower incisor region are associated with it. It is, I think, really a symptom of an abnormal act of swallowing and should not be regarded as a separate and troublesome trick, for I have not seen it except in association with an atypical swallow. Among the ways of overcoming it I have read of muscle exercises and of an operation to cut the nerve supply.

Those children who perform their basic act of swallowing in this atypical way never put their teeth together in the act of deglutition either at mealtimes or other times. There is not any easy alternation between the "teeth shut" and "teeth open" methods according to the character of the food being swallowed. They just persist in the "teeth open" method throughout. In fact it is difficult for them, even with a conscious effort, to swallow with the teeth together.

In contrasting these two types of deglutition it would be fair to say that the direction and intensity of the forces operating upon the jaws and dental arches are considerably different. In the normal, the direction is mainly from within outward, a centrifugal pressure of the tongue against the jaws and teeth. In the atypical, the thrust of the tongue is in part uselessly spent, and a

centripetal pressure of the lips and cheeks comes into play. Deglutition is so frequently performed that there might be some justification for wandering whether a variation from the normal would have an effect on the shape of the jaws and arches.

My attention was first drawn to the possible importance of the act of swallowing, many years ago, when I was reviewing a case undergoing treatment which was responding poorly and causing anxiety. I found that the basic swallow was performed with the teeth apart. This led to an enquiry into the act of swallowing in all cases seeking orthodontic treatment. I was surprised to find that, in a run of 86 children applying for orthodontic treatment at Guy's Hospital at the time, as many as 51 habitually separated their teeth when swallowing. Through the good offices of Mr. J. F. Pilbeam, I was able to examine, in January, 1945, an unselected group of school children between the ages of 7 and 11¾ years. An appraisal was made of the dentition of each child, and the way in which the basic swallow was performed was ascertained immediately afterward. Before giving any figures, I should explain that the standard set to assess the morphological perfection of the dentition of the children was not of prime importance to the investigation provided it was a constant one. I set a fairly high standard and it was as constant as one pair of eyes could make it. Developmental shortcomings recorded did not necessarily mean malocclusion worthy of treatment, and I tried to discount errors due to the accident of extracted teeth.

Variations in the Mode of Swallowing in a Group of 93 School Children.—

A. With teeth in occlusion	61
B. With all teeth separated	27
C. With cheek teeth in occlusion and with tongue spreading through separated incisors	3
D. With incisors together and with sides of tongue spreading through separated cheek teeth	1
E. Not ascertained	1
Total	93

Examination of the dental condition of the children in groups A, B, C, D, revealed the following:

A. Among the 61 children there were 22 whose dentitions deviated from normal—36 per cent.
B. Among the 27 children there were 22 whose dentitions deviated from normal—81 per cent.
C. Among the 3 children there were 3 with anterior open-bite.
D. The one child had prenormal occlusion.

Comparing the percentage of maldevelopment in groups A and B, the figures show that it is more than doubled among the swallowers with the teeth separated. This increase is, I think, great enough both to discount any error in observation or judgment on the part of the investigator, and to point to an association of some sort between the mode of swallowing and the shape of the jaws and arches.

The most frequent abnormality to appear was the small upper arch (in 50 per cent); the next were the small upper and lower arches (in 27 per cent). The vaults of the palate were high more often than not.

The frequent conditions were similar to the ones which are commonly ascribed to adenoids or mouth breathing.

Atypical swallowers are interesting in very many respects. Their mothers frequently complain that they tend to bolt their food, and I am inclined to think it is a correct observation, for the trapping of that part of the food, which is not yet ready to be swallowed, is not efficiently performed with the teeth apart.

Another point of interest I met with among the atypical was an occasional difficulty in pronouncing their sibilants. Whenever I have heard a lisp, I have also found an atypical swallow.

Wrong swallowers tend to have less clean mouths and teeth. The self-cleaning action of the mouth is impaired if the basic swallow is not performed by the tongue acting within the occluded teeth. It is a difficult point to demonstrate in the very young for it requires a considerable disturbance to upset the self-cleansing process in early life. I can remember one particular instance of a child of 3 years, who had been eating some chocolate cake, going to his mother to ask her to remove a smear of cake which remained in the vault of the palate and which its atypical swallowing movements could not dislodge. With increasing years it becomes easier to demonstrate. When an adult patient who, despite regular scaling and polishing and despite protestations that the teeth are carefully cleaned, presents himself invariably with a caseous deposit at the necks of the teeth and along the gum margins, you will find that he does not swallow with his teeth together. The most detergent swallow is performed with the teeth together.

Sillman has shown that the gum pads in the infant are not in contact at any point when the mandible is at rest. If one looks at a lateral x-ray of an infant's jaws, one is surprised to see how far apart they are. The babies look as though they have been x-rayed in the act of yawning. Look at any lateral x-ray taken at rest before about two years of age and you will see a wide separation. Broadbent's x-rays show it, and so do Symington and Rankin's *Atlas of Skiagrams* of thirty years ago. The erupting teeth and deepening alveolus gradually lessen this wide intermaxillary space until, if you study Broadbent's tracings, occlusion is restfully reached at 2½ years. But in the suckling baby I do not think the gum pads are brought together at *any* time. If you press up firmly on a baby's chin you can force the jaws into contact, but you surprise yourself with the senile, "nutcracker" expression that you suddenly produce. It is an expression never produced by the baby himself not even when he is swallowing. In other words the infantile swallow does not entail a closed jaw motion. The tongue spreads between the parted jaws. The swallowing of milk in any event requires the jaws to be apart. Now this is the very action so frequently seen in older children with an atypical swallow. These older children, despite the great increase in the vertical depth of their jaws and their erupting permanent teeth with the consequent filling up, as it were, of their intermaxillary space, have not outgrown their infantile swallow. There must be a time when it is normally outgrown. Broadbent maintains that centric occlusions is not reached until about 2½ years, and it might be at about that time that the adult way of swallowing is usually acquired.

In view of the frequency with which the atypical swallow is associated with very early troubles of the upper respiratory spaces, a direct causal relationship may exist.

If the main trend of these views can be accepted, several problems can be clarified. It would allow us to throw some light on the uneasy association between adenoids and tonsils and small jaws. An abnormal nasopharyngeal mucosa may lead to the "teeth apart" swallow, to developmental defects, and to a chronic hypertrophy of lymphoid tissue, but if it did not lead on to adenoids and tonsils, it could still produce an atypical swallow and developmental defects.

One can thus appreciate why one sees small arches in children who apparently have no present troubles with throat and nose.

It affords a more acceptable reason for the benefits upon bone growth which are credited to the chewing of tough food than is current at the moment. It is not so much the muscular vigor demanded as the type of deglutition evoked which is beneficial. In this connection one may add that dry foods evoke the "teeth together" swallow and wet foods the "teeth apart" swallow.

Many growth defects have an early origin, for it dates an important abberation of a normal function to the time when the deciduous dentition is becoming established. Rogers describes an exercise which he found of benefit to all his cases of malocclusion. It is the masseter-temporal-tongue exercise. The masseters and temporals are tightened; in other words the teeth are clenched, and at the same time the tongue is forced against the teeth and alveolar processes. You will at once recognize this as the very exercise which you perform every time you swallow anything but soft foods or drink, and it is what many a child has *never* had the advantage of during his growing years.

Harelip in Twins: Queries and Minor Notes. J. A. M. A. **130**: 545 (Feb. 23,) 1946.

To the Editor: A woman, aged 31 years, gave birth to twins. The first boy had a harelip on the right side and weighed 7 pounds, 2 ounces (3,230 grams). The second boy had a harelip on the left side and weighed 5 pounds (2,268 grams). Is this what would be expected in a birth of this kind? These boys had separate amniotic sacs with one placenta.—M.D.

Answer: The question is whether or not one would expect both members of a pair of twins to have harelip if one of the pair does. Several issues are involved. First, is there any evidence of a hereditary basis for harelip? Harelip occurs sporadically in some families without any evidence of a familial tendency. Yet enough pedigrees exist which strongly suggest that hereditary factors do play a role in a majority of instances. Several pedigrees show 6 or 7 cases of harelip in two or three generations. This is a much higher incidence than would be expected if environmental factors alone were responsible. Furthermore, occurrences among twins also suggest that genetic factors frequently play a role.

Whether or not both members of a pair of twins would be expected to show harelip if one does, depends to some extent on the type of the twin set that is involved. If the twin set is of the fraternal type, the probability for either member of the set is the same as for any child born singly to that family. If the twins are of the one-egg type, the probability is great that the second member will show the abnormality if the first one does. Not enough twins with harelip have been properly diagnosed for zygosity to give exact information, but indications are that even among one-egg twins one member may be free from harelip while the other one shows the defect.

The mirror imaging reported for the twins in question introduces an unsettled problem. One-egg twins do tend to show mirror imaging to a greater degree than do two-egg twins. Therefore, since the twins in question are of the one-egg type, it is not suprising to find one member with a harelip on the left side and the other with the defect on the right.

There are questions relative to differences in incidence among sexes, mode of inheritance of harelip, and the like, which are of interest, but a discussion of such questions would go too far afield.

It is important to have all cases of harelip and similar defects reported in the literature. This is true especially if the defect occurs among twins or reappears in several generations of a family.

News and Notes

Sidelights on the Meeting of the American Association of Orthodontists in Colorado Springs

A sightseeing "must" at the meeting of the American Association of Orthodontists was the famous Will Rogers' Shrine of the Sun, a memorial both to Rogers and to his friend Spencer Penrose the builder, 8,000 feet up on Cheyenne Mountain Wonder Road. Constructed from one huge pink granite boulder, hewn from the side of Cheyenne Mountain, the Shrine is a landmark of the Pike's Peak region. Lighted by night—gleaming in the sun by day, the shrine, equipped with the most complete amplification system ever installed, sends vibraharp and Westminster chime notes for 20 miles out over the surrounding prairies. At the Shrine entrance is the Jo Davidson bust of Will Rogers.

Orthodontists and their wives for the most part made it a point to visit this shrine sometime during the meeting of the American Association of Orthodontists.

Dr. J. N. Pike and Dr. J. M. Pike of Minneapolis, Minnesota, great-grandson and great-great-grandson of Zebulon Pike, attended the meeting of the American Association of Orthodontists.

Just 140 years ago "Zeb" pointed at the peak (later named in his honor) and voiced doubts that it would ever be scaled by "mortal man." Plans were made to take the two orthodontists to the top of the Peak in the cog train to dispel any doubts their famous ancestor may have passed down to them of the climb.

The Southern Section of the Pacific Coast Society of Orthodontists was well represented at the American Association of Orthodontists meeting.

A big four-motor plane left Burbank on September 29 with the following on board: Dallas McCauley, E. M. Johnston and wife, R. P. Husted and wife, Fred McIntosh, Hays Nance and wife, A. L. Heimlich and wife, S. L. Atkinson and wife, David England and wife, Aldys Gray, Bill Armstrong, Wilber Bedford and wife, Bob Gawley, Harry Faulkner and wife, T. S. Martin, Merle Davis, L. R. Sattler, W. C. McCarthy, J. W. January and wife, and Evelyn Snyder.

Koshare Indian Dancers Make a Smash Hit at Meeting of American Association of Orthodontists

Orthodontists who wanted to go back in retrospect to boyhood dreams had the opportunity to do so while attending the meeting of the American Association of Orthodontists at the Broadmoor Hotel, in Colorado Springs, Colorado, on Sept. 30, Oct. 1, 2, 3, 1946.

They saw Indians dancing around the council fire to the weird rhythms of the Great Medicine Drum, placating the Great Thunder Bird, and invoking the peace of Waconda Agua, the Great Spirit.

They were not real Indians, however, but Boy Scouts from La Junta, Colorado, officially Troop 230 of the Rocky Mountain Council of Boy Scouts of America, without doubt the world's greatest paleface interpreters of the ways of the American Indian.

This marvelous activity and its resultant entertainment are the results of the combined efforts of at least fifty men and over two hundred boys, who all followed the trail together.

On the spacious patio of the Broadmoor Hotel, this performance of the Koshares was so realistic that orthodontists, their wives, and families, could not realize that it was not the dance of full-blooded Indians. As the lights pierced the darkness, at first was heard the rumbling tattoo of the huge ceremonial drum, and from the shadows appeared the vanished red men who once thronged the Santa Fe Trail, to begin the dances that interpret their primitive struggles, hopes, fears, and prayers. Savage Indians, their faces slashed with livid streaks of color, surmounted by whirring feather headdresses, danced and chanted to the tempo of buffalo-hide drums. The spectators could hardly realize that the savages who danced for them were, when the paint was washed off, Boy Scouts, none of them a bit more blood-thirsty than the boy next door.

Many orthodontists, after the dances were performed, wanted to know more about the boys' organization.

Throughout the summer, the Koshares do considerable touring, putting on performances in other towns within a 300-mile radius. When they were booked to perform at a convention in Denver, one member balked at the idea of watching a bunch of Boy Scouts play Indian. Buck Burshears, the founder, says the same man wrote him afterward, expressing his delight at the performance. Many people think the boys are really Indians.

No member of the troop may accept money for a public appearance, but the proceeds from the annual show and appearances elsewhere cover traveling expenses and help pay for $50,000 worth of costumes and properties. In addition, the money makes trips possible—visits to Indian reservations, as well as such affairs as concerts, hocky games, and ski meets.

Despite the time they put in on their Indian work, many of the Koshares are leaders in athletics, and several have become college stars. The Indian dancing, coaches say, strengthens and toughens leg muscles. Dean Strain, who later became a captain in the Air Force and lost his life in the war, was said by the basketball coach at the University of Colorado to have had the best footwork of any boy he ever coached.

The costumes were superb. They represented thousands of patient hours of painstaking toil on the part of the boys who put on the performance.

President Brusse and the program committee, in introducing the Koshare Indians, presented one of the most interesting and wholesome entertainments ever witnessed at a meeting of the American Association of Orthodontists, and the approbation was unanimous.

H. C. P.

Pacific Coast Society of Orthodontists

SOUTHERN SECTION

The regular quarterly meeting of the Southern Section of the Pacific Coast Society of Orthodontists was held on Friday, Sept. 20, 1946, at the University Club in Los Angeles, California.

Dr. L. B. Higley gave two lectures in the afternoon discussing primarily "Cephalometric Diagnosis, Its Implications in Treatment," supplementing his lecture with lantern slides. Dr. Gray again presented Dr. Higley who conducted a question-and-answer period during which many points of his afternoon lectures were discussed and elaborated upon. The questions and discussions demonstrated a very active interest in the subject by those present.

PRESIDENT'S MESSAGE*

Due to a conflict of convention duties in San Francisco, it has been found necessary to change our meeting dates in February, 1947, to follow the February 22 holiday instead of precede it—February 24, 25, 26. The Palace Hotel has allowed us seventy rooms for guests instead of fifty as previously. Other hotels have reserved fifteen and twenty rooms

*Printed in Volume 22 of the Bulletin of the Pacific Coast Society of Orthodontists.

each, so that all members will be accommodated. Dr. Leland Carter will again be in charge of reservations with his courteous and efficient service as he was last May.

Every effort has been made to keep our program intact to avoid the necessity of printing new programs. The men from Tennessee and Alabama turned down the invitation to appear at the A. A. O. meeting in Colorado Springs in favor of coming out here. Also the program committee graciously invited the Southwest Society group to put on the edgewise arch clinic rather than our Southern group. We had to give up Dr. Hays Nance's splendid clinic to complete our Pacific Coast Day at Colorado Springs, but we have an outstanding attraction to take its place on our program. Will Sheffer will lead off before the general assembly and Hays Nance and Clarence Carey will have two hours each in separate rooms. The round-table luncheon will be in charge of George Hahn, followed by Spencer Atkinson on "History, Trends, and Future of Orthodontics."

The Board of Directors has voted unanimously that $25.00 be sent to the University of California Millbery Memorial Fund to memorialize the name of Dr. Frederick A. Leslie who passed away last spring, and that suitable resolutions be sent to Mrs. Leslie and to his brother, Dr. W. W. Leslie of Fresno, now a past service member. Ted was Secretary of the Society for many years and a hard worker for the success of our meetings.

The Board also voted to present pins to all our honorary members in recognition of such membership and the work they have done for the advancement of the science of orthodontics.

Renfrow Decorated for Selective Service Work

Col. Louis H. Renfrow, chief legislative and liaison officer of the Selective Service System, received the War Department Legion of Merit from Maj. Gen. Lewis B. Hershey, Selective Service director, in a ceremony at National Headquarters in Washington, D. C.

A member of the Army Dental Corps, Colonel Renfrow was cited for "exceptionally meritorious service" performed from February, 1942, to May, 1946, as an official in the medical division of Selective Service headquarters.

The citation commended Colonel Renfrow for his "material assistance in the supervision of examining physicians, dentists and members of the examining boards in the physical examination of registrants."

He was appointed chief legislative and liaison officer of National Headquarters in September, 1945, and was responsible for all legislative and liaison matters affecting Selective Service. He also has acted as liaison officer to the White House.

Peoria Dental Society

The Peoria (Illinois) Dental Society will honor Dr. R. C. Willett with a testimonial dinner on Monday evening, Nov. 18, 1946.

All those wishing to participate in this event, please communicate with Dr. C. M. Smith, Jefferson Building, Peoria 2, Illinois.

Guatemalan Association of Orthodontics and Relative Sciences

A letter from Guatemala announces the following:

"We have the honor to inform you that in order to create a closer collaboration and to promote the study, wishing furthermore to increase the scientific exchange between the orthodontists of our countries, we have founded the 'Asociacion Guatemalense de Ortodoncia y Ciencias Afines' (Guatemalan Association of Orthodontics and Relative Sciences) for which development we are counting on your valuable cooperation."

The secretary of the society is Dr. Enrique Estrada, Paidodoncia, Apartado de Correos No. 110, Guatemala.

Highlights at the Eighty-Seventh Annual Session of the House of Delegates of the American Dental Association

The American Dental Association will hold a full scientific meeting in Boston in early August, 1947, it was voted at the 87th Annual Session of the House of Delegates at Miami, Florida, Oct. 14-16, 1946. The Boston meeting, expected to be attended by 15,000 dentists, will be the first full meeting since 1941.

The House of Delegates also invited the Federation Dentaire Internationale to meet at the same time in Boston to make plans for the Tenth International Dental Congress.

Meeting for the first time in two years, the House of Delegates handled a record amount of business at the Florida session under the guidance of Walter H. Scherer, of Houston, Texas, who retired as president at the close of the business sessions.

Sterling V. Mead, of Washington, D. C., was installed as president.

H. B. Washburn, of St. Paul, retiring trustee from the Tenth District, was elected president-elect, defeating Fred J. Wolfe, Jr., of New Orleans.

Harold Hillenbrand, of Chicago, editor of *The Journal of the American Dental Association*, was elected general secretary for a three-year term, succeeding Harry B. Pinney, also of Chicago, who retired after nineteen years of continuous service with the Association. Hillenbrand was elected after being nominated unanimously for the position by the Board of Trustees.

Roscoe H. Volland, of Iowa City, Ia., was re-elected treasurer.

E. B. Penn, of Miami, Fla., chairman of the local arrangements committee for the meeting, was elected first vice-president. B. B. McCollum, of Los Angeles, Calif., was named second vice-president, and Malvern D. Huff, of Atlanta, Ga., was elected third vice-president.

Eight new trustees, twice the usual number, were also elected.

In the only contest, Robert P. Thomas, of Louisville, Ky, defeated E. C. Hume, also of Louisville, for trustee for the Sixth district. Thomas succeeded Howard E. Summers.

Other trustees elected are:

First district—Henry Hicks, of Greenwich, Conn., re-elected.

Second district—William McGill Burns, of Brooklyn, N. Y., replacing Percy T. Phillips, of New York City, interim trustee named following the death of Harvey J. Burkhart, of Rochester, N. Y.

Seventh district—J. B. Carr, Indianapolis, Ind., succeeding Carlos H. Schott, of Cincinnati, Ohio.

Tenth district—C. S. Foster, of Cedar Rapids, Ia., succeeding H. B. Washburn, of St. Paul, Minn.

Eleventh district—Fred S. Shandley, of Seattle, Wash., succeeding Russell A. Sand, of Fargo, N. D.

Twelfth district—Willard Ogle, of Dallas, Tex., succeeding Fred J. Wolfe, of New Orleans, La.

Thirteenth district—R. C. Dalgleish, of Salt Lake City, Utah, succeeding David W. McLean, of San Marino, Calif.

Holdover trustees are LeRoy M. Ennis, of Philadelphia, Pa.; Harold W. Oppice, of Chicago, Ill.; C. J. Wright, of Lansing, Mich.; Edward J. Jennings, of Trenton, N. J.; and Clyde E. Minges, of Rocky Mount, N. C.

L. M. Cruttenden, of St. Paul, Minn., was elected president of the State Officers' Conference, succeeding J. E. John, of Roanoke, Va. Robert L. Borland, of Los Angeles, was elected vice-president of the group, and H. K. Willits, of Reading, Pa., was named secretary.

Major business items handled by the delegates included the adoption of an expanded budget calling for estimated expenditures of $753,000 in the new fiscal year. This budget, exceeding estimated income for the year by $68,000, was adopted in favor of a budget calling for a total of $678,000 in estimated expenditures, or $7,000 less than estimated income of $685,000. A major portion of the increase was allocated for expanding operations of the Bureau of Public Relations and for the publication of two full issues of *The Journal of the American Dental Association* each month.

Other major actions of the House provided for:

Continuance of the Washington, D. C., office of the Association to be directed by an assistant secretary. C. Willard Camalier, former chairman of the War Service and Post-war Planning Committee, will be in charge of this office.

A retirement plan for full-time employees of the Central Office staff. The retirement age was set at 65 years.

A standing committee on Military Affairs composed of five members, including three World War II veterans.

A War Memorial Committee to plan a permanent memorial for dentists who died while serving with the nation's Armed Forces.

And a Children's National Health Day to be proclaimed annually by the President of the United States.

The House of Delegates also voted to sponsor legislation in the new Congress to reorganize the Army Dental Corps to give "dentistry full responsibility for dental matters in the armed forces," and directed that all resources of the Association be used to "hasten the discharge of all dental officers over and above the actual need of the armed forces."

Delegates instructed the Association's legislative committee to oppose the establishment or elimination of a "means test" in dental programs at the national level, declaring that this right should be reserved for state and community determination.

The House approved a committee report upholding the action of the Council on Dental Education in suspending approval of the School of Dental and Oral Surgery of Columbia University.

The House reiterated its opposition to compulsory health insurance.

It recommended to state associations that dental hygienists be approved as ancillary aids and that the state organizations promote proper training courses for dental hygienists.

The House "commended to date" the activities of the National Committee of Dentists affiliated with the National Physicians Committee to Extend Medical Care.

Delegates also voted to present a revised constitution at the 1947 meeting as prepared by a special committee of the Board of Trustees.

At the afternoon session of the opening day, a memorial service was conducted for dental officers who died while serving with the nation's Armed Forces during World War II. Participating were President Scherer; Rear Admiral Alexander G. Lyle, of the Navy; Brig. General Thomas L. Smith, of the Army; Chaplain W. R. Bryant, of the Miami Naval Air Station; and Sgt. Richard Wetmore, bugler, of Pratt General Hospital, Coral Gables, Fla.

Percy R. Howe, of Belmont, Mass., director of the Forsyth Dental Infirmary for Children at Boston, was presented a plaque for distinquished service to dentistry. He is the first living person to receive the honor. The award had been bestowed only once before when it was granted posthumously to Dr. Horace Wells, discoverer of the anesthetic powers of nitrous oxide gas.

Immediately following the ceremonies honoring Dr. Howe, President Scherer conferred the award posthumously upon William T. G. Morton, Boston dentist, who made the first successful public demonstration of ether anesthesia a century ago. A duplicate of the Morton plaque was presented Massachusetts General Hospital where Morton's demonstration was held Oct. 16, 1846.

Other special ceremonies included the presentation of a special Morton plaque to the Association by Stephen Mallett of Boston, representing New England dentists, and the presentation of a certificate of appreciation to President-elect Mead for his services while representing the Association on a lecture trip in Mexico. The certificate was presented by Enrique C. Aguilar, of Mexico City, secretary of the Asociacion Dental Mexicana.

Several associated groups also met at Miami. Reports of these meetings follow:

The American Society of Oral Surgeons, which held its 28th annual meeting, installed Glenn J. Pell, of Indianapolis, Ind., as president, to succeed Van B. Dalton, of Cincinnati, Ohio. Other officers elected are: Vernor H. Eman, of Grand Rapids, Mich., president-elect; James R. Cameron, of Philadelphia, Pa., vice-president; Harry Bear, of Richmond, Va., secretary-treasurer; and Dalton and Horace L. Cartee, of Miami, members of the

board of directors. The society also announced the establishment of a specialty board—The American Board of Oral Surgery—to set qualifications for the practice of oral surgery. Members of the board, which will begin holding examinations in 1947, are Howard C. Miller, of Chicago, president; Carl W. Waldron, of Minneapolis, vice-president; Leslie M. FitzGerald, of Dubuque, Ia., secretary-treasurer; and Althol L. Frew, of Dallas, Tex., Frank B. Hower, of Louisville, Ky., Aubrey L. Martin, of Seattle, Wash., and James R. Cameron, directors.

The Academy of Dental Prosthetists, which held its twenty-eighth annual meeting in Miami Beach, also announced the creation of a specialty board. Members of the new board include: C. O. Boucher, of Columbus, Ohio; O. M. Dresen, of Milwaukee, Wis.; B. L. Hooper, of Lincoln, Neb.; I. R. Hardy, of Boston, Mass.; R. H. Kingery, of Ann Arbor, Mich.; David W. McLean, of San Marino, Calif.; C. J. Stansbery, of Seattle, Wash.; and R. W. Tench, of New York, N. Y.

John I. Sloan, of Cleveland, Ohio, was installed as president of the Academy to succeed O. M. Dresen, of Milwaukee, Wis. Other officers are: David W. McLean, San Marino, Calif., president-elect; I. R. Hardy, of Boston, vice-president; I. Lester Furnas, of La Jolla, Calif., secretary-treasurer.

The American Association of Dental Examiners, which held its sixty-third annual session at Miami, elected the following officers: T. M. Barlow, of Bellingham, Wash., who succeeds Paul E. Jones, of Farmville, N. C., as president; Henry A. Swanson, of Washington, D. C., James J. Vaughan, of Nashville, Tenn., and J. J. Clark, of Artesia, N. Mex., vice-presidents; R. P. Thomas, of Louisville, Ky., secretary-treasurer.

The American Dental Assistants Association held its twenty-second annual session and elected the following officers: Margaret Sharp, of Jasonville, Ind., president; Sadie Hadley, of Beverly, Mass., Katie McConnell, of Atlanta, Ga., and Steve Ann Mills, of Dallas, Tex., vice-presidents; Aileen Ferguson, of Jamaica Plain, Mass., general secretary; and Evelyn Brett, of Etna, Pa., treasurer.

Orthodontics and Oral Surgery Popular at Northwestern University

Courses in orthodontics and oral surgery were in the greatest demand when the Dental School, Northwestern University, resumed its session, Sept. 30, 1946, school officials reported.

Also reported were the following faculty changes: Harold J. Noyes left his post in orthodontics to become dean of the University of Oregon; Earl Zaus retired as professor of physiology after twenty years on the staff; Stanley Harris will replace Dr. Zaus; and John R. Thompson has taken charge of the Department of Orthodontics. Dan Y. Burrill has accepted a faculty appointment at the University of Louisville and has already joined the faculty.

Notes of Interest

Dr. Harry L. Keel announces the association of Dr. Dwight A. Jackson in the practice of orthodontics, 704 Nissen Building, Winston-Salem, N. C.

Robert C. Sturtevant, D.D.S., wishes to announce his return from military service and the opening of his office at 88-23 184th Street, Jamaica 3, N. Y. Practice limited to orthodontics.

Dr. Will C. Welch announces the association of Dr. Frank C. Welch, 806 Merchants National Bank Building, Terre Haute, Ind. Practice limited to orthodontics.

Dr. John Rush McCoy announces that he has discontinued his Beverly Hills office and will resume full-time practice at 3839 Wilshire Boulevard, Los Angeles, California.

Dr. James David McCoy announces that as soon as the ill-effects of the recent fire in his office have been overcome he will discontinue his Los Angeles office and conduct full-time practice at 405 North Bedford Drive, Beverly Hills, California.

Herman Adelstein, D.D.S., has resumed his practice of orthodontics at 717 Schofield Building, Cleveland 15, Ohio.

OFFICERS OF ORTHODONTIC SOCIETIES

The AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY is the official publication of the American Association of Orthodontists and the following component societies. The editorial board of the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY is composed of a representative of each one of the component societies of the American Association of Orthodontists.

American Association of Orthodontists

President, Earl G. Jones . . . . . 185 East State St., Columbus, Ohio
President-Elect, Lowrie J. Porter . . . . . 41 East 57th St., New York, N. Y.
Vice-President, G. Vernon Fisk . . . . . 818 Medical Arts Bldg., Toronto, Ont., Can.
Secretary-Treasurer, Max E. Ernst . . . 1250 Lowry Medical Arts Bldg., St. Paul, Minn.

Central Section of the American Association of Orthodontists

President, C. S. Foster . . . . . 803 Dows Bldg., Cedar Rapids, Iowa
Secretary-Treasurer, L. B. Higley . . . . . 705 S. Summit St., Iowa City, Iowa

Great Lakes Society of Orthodontists

President, Willard A. Gray . . . . . Medical Arts Bldg., Rochester, N. Y.
Secretary-Treasurer, C. Edward Martinek . . . . . 661 Fisher Bldg., Detroit, Mich.

New York Society of Orthodontists

President, Glenn H. Whitson . . . . . 80 Hanson Pl., Brooklyn, N. Y.
Secretary-Treasurer, Oscar Jacobson . . . . . 35 W. 81st St., New York, N. Y.

Pacific Coast Society of Orthodontists

President, J. Camp Dean . . . . . 1624 Franklin St., Oakland, Calif.
Secretary-Treasurer, Earl F. Lussier . . . . . 450 Sutter St., San Francisco, Calif.

Rocky Mountain Society of Orthodontists

President, Henry F. Hoffman . . . . . 700 Majestic Bldg., Denver, Colo.
Secretary-Treasurer, George H. Siersma . . . . . 1232 Republic Bldg., Denver, Colo.

Southern Society of Orthodontists

President, J. E. Brown . . . . . Merchants National Bank Bldg., Mobile, Ala.
Secretary-Treasurer, Leland T. Daniel . . . . . 407-8 Exchange Bldg., Orlando, Fla.

Southwestern Society of Orthodontists

President, Brooks Bell . . . . . Medical Arts Bldg., Dallas, Texas
Secretary-Treasurer, James O. Bailey . . . . . Hamilton Bldg., Wichita Falls, Texas

American Board of Orthodontics

President, Frederic T. Murlless, Jr. . . . . 43 Farmington Ave., Hartford, Conn.
Vice-President, Joseph D. Eby . . . . . 121 E. 60th St., New York, N. Y.
Secretary, Bernard G. deVries . . . . . Medical Arts Bldg., Minneapolis, Minn.
Treasurer, Oliver W. White . . . . . 213 David Whitney Bldg., Detroit, Mich.
James D. McCoy . . . . . 3839 Wilshire Blvd., Los Angeles, Calif.
Claude R. Wood . . . . . Medical Arts Bldg., Knoxville, Tenn.
James A. Burrill . . . . . 25 E. Washington St., Chicago, Ill.

In the January issue each year, the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY will publish a list of all of the orthodontic societies in the world of which it has any record. In addition to this, it will publish the names and addresses of the officers of such societies.